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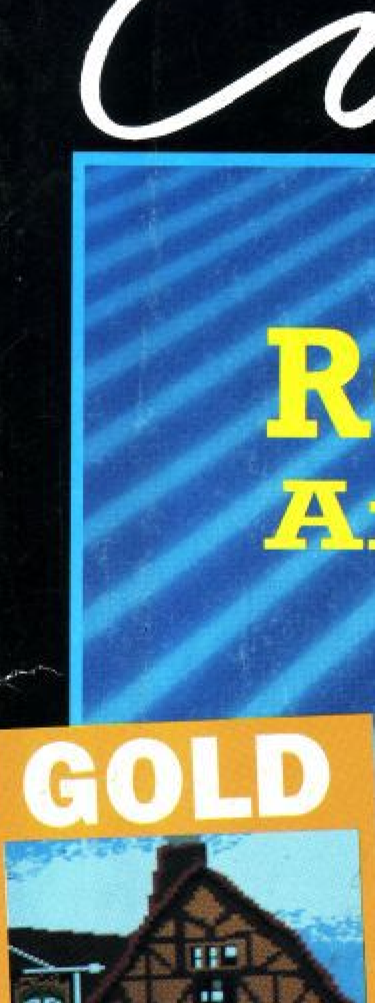
AMSTRAD Computer User

WITH CPC COMPUTING



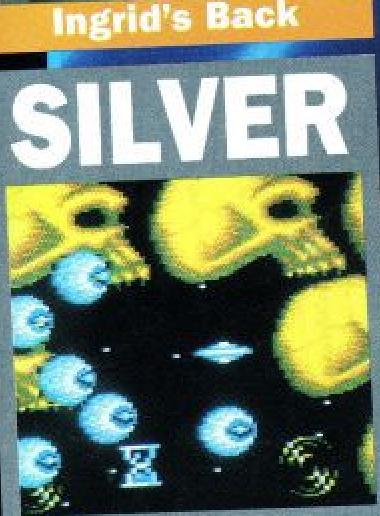
ROMCHANGER
Arnold goes schizo

GOLD



Ingrid's Back

SILVER



Netherworld

TYPE-INS
10 Liners are back

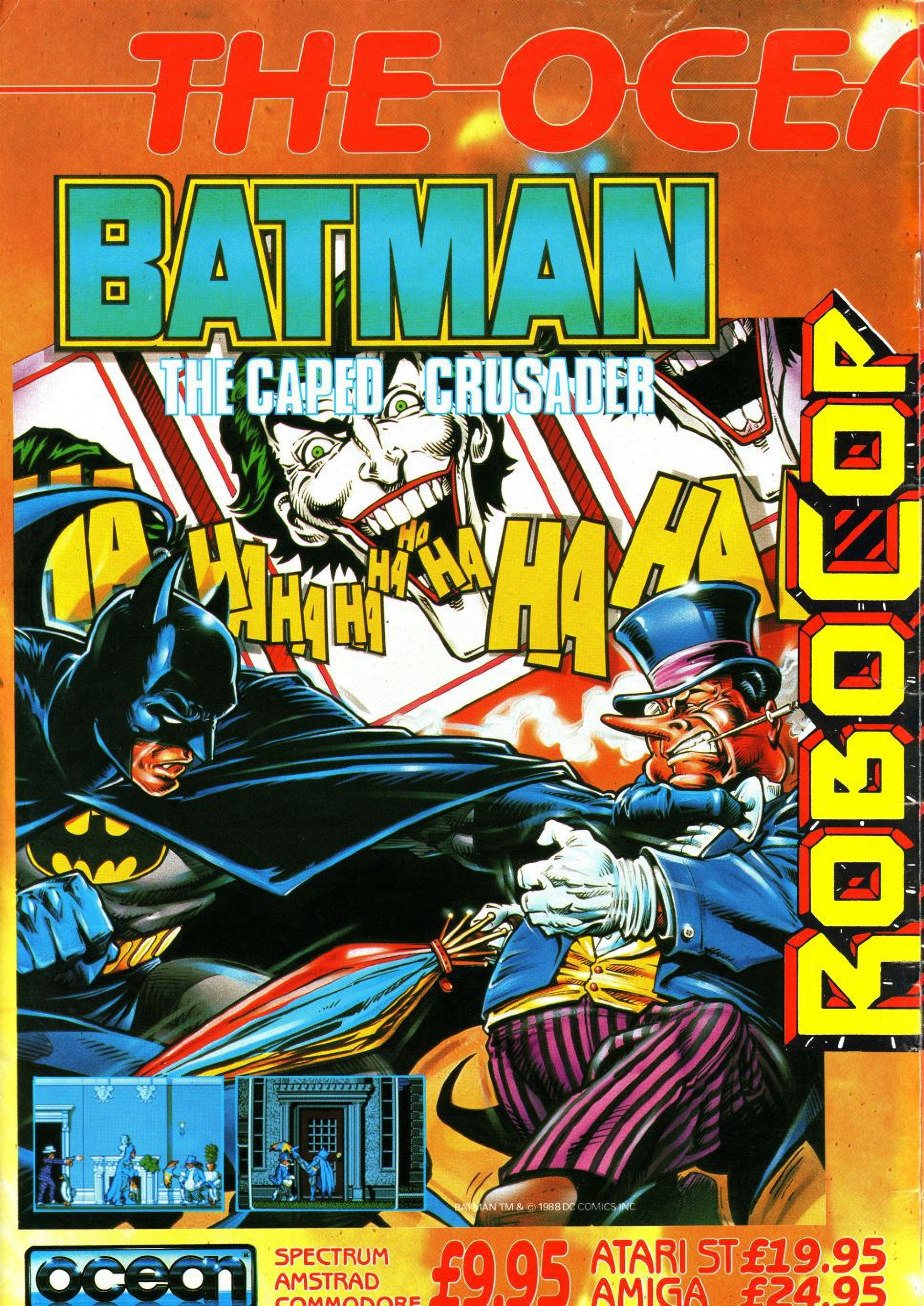
GAMBLING
Is it worth the risk?

PLUS
Auntie John puts the squeeze on screen

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AMSTRAD Computer User

The official magazine for Amstrad CPC users

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March 1989





WHICH GAME?

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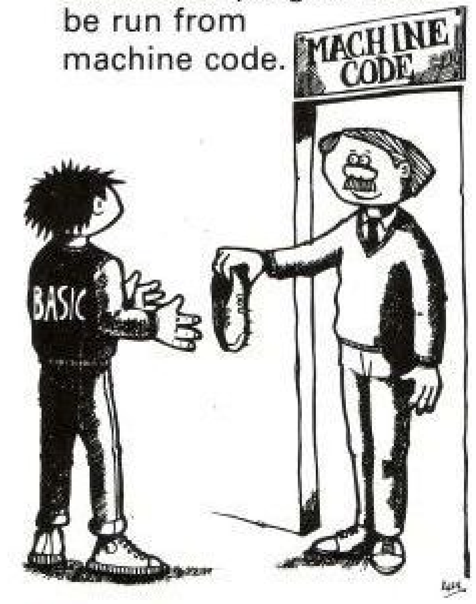
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PROGRAMMING



COVER STORY



FEATURES

WHICH GAME?

Jeff Walker brings you the latest news on the games software scene

FOLLOWING the success of Crazy Cars, Entertainment International is soon to release the 8 bit conversion of the sequel, *Crazy Cars II*.

It has been coded by the French Z80-programming geniuses, Gil and Paul of Titus Software, whose previous CPC successes include Fire and Forget, Titan and Off Shore Warrior.

Hermit-like Gil is the expert who programs the complex routines that make Titus games stand out from the rest. He is 23 years old and quite a character. Working out of a Paris suburb attic, he programs with a CPC that has a device called an in-circuit emulator replacing the Z80 chip, which lets him spy into the internal workings of his program even if it crashes.

"I never know what day it is", he told us after we persuaded his bosses to let him answer the phone. "I even forget to eat when I plunge into a difficult programming job".

We've sent him a packet of formatted chocolate biscuits and a book on jogging. You can expect Crazy Cars II to hit the streets any day now. Watch this space for the first hands-on review.



Exclusive preview shot of the Crazy Cars II CPC conversion, promising stunning scenery and fast road action



Iron Lord, a Electronic Arts adventure set in a medieval world where strategy is as important as strength. Out mid-summer at £12.99 tape, £19.99 disc



Electronic Arts escape-from-the-nasty-maze game, Puffy's Saga. Should be ready round about August priced at £8.99 tape, £14.99 disc

TWENTY years ago Puff was a magic dragon who lived by the sea and frolicked in something nobody can remember in a land called something nobody can spell. And very happy he was too.

Now he's gained a girlfriend and is going to be the star of a new Electronic Arts maze game for the CPC, *Puffy's Saga*.

Originally scheduled for an October 1988 release, Puffy's Saga has mysteriously slipped off the Electronic Arts release schedule along with Iron Lord, an adventure with graphics set in medieval times. However our sources in Slough tell us to expect both games mid-summer.



Spanish coded Blackbeard, the first original CPC game on the Kixx label. Out now priced £2.99 on tape

LISTEN 'ere me hearties. Kixx has released its first original CPC release, *Blackbeard*. Coded in Spain – haharr, Juan lad – by Carlos Arias, the game is played on board HMS Victory, which is now under the captaincy of the ruthless Redbeard – the scurvy dog – who has waylaid your treasure map and stowed it in a chest somewhere deep in the bowels of his ship.

Yo ho ho ho and a bottle of bullfighters, we hear you cry. Pieces of octal, pieces of octal, we reply. £2.99 worth, in fact. Review next month. Hiccup. Gordon Bennet, thish rum ish shtrong shtuff.

CONTENTS

HE is back, and this time he's taking no prisoners. Colonel Trautman has been captured by the Russians in Afghanistan – whoops, there goes another plot – and there is only one person capable of freeing him. Negotiate the minefields, explore the Russian camp – he seems like a nice boy – and move on to the explosive climax! Rambo is back in *Rambo III*. Who does he think he is, Rocky?



Silverbird goes poster mad with a £1.99 sliding picture puzzle, Pasteman Pat



Sneaky preview screen shot of Chuck Yeager's Advanced Flight Trainer. Full review next month. Definitely

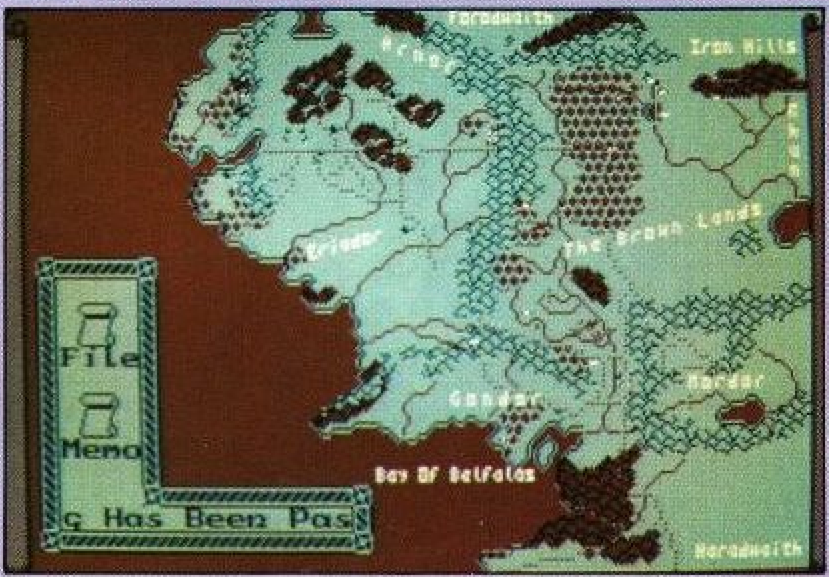
GALLUP CHART

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MELBOURNE House is back with a bang. The first two parts of the Tolkien series, The Hobbit and Lord of the Rings, have sold more than half a million between them worldwide. Now comes Tolkien III – *War in Middle Earth*.

The whole of Tolkien's panoramic vision has been included. You follow the footsteps of Frodo and Gandalf as they battle to get the ring to the Cracks of Doom. Ranged against you are all the evil forces of the dark lord Sauron and the corrupt wizard Saruman.

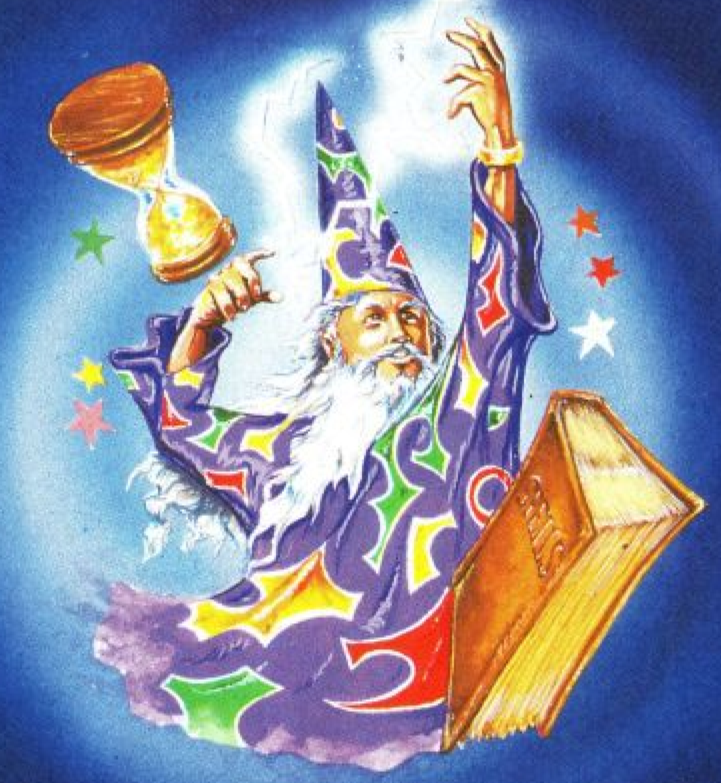
Multiple playing levels let you control all the characters and armies that appear in the book, from the broad sweep of strategy right down to individual characters' actions on the battlefield. Out now at £9.99. Review next month.



War in Middle Earth, the third in Melbourne House's Tolkien series in the shops now at £9.99 on tape

Time and magik

The trilogy



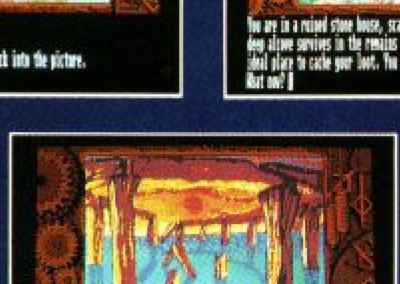
Interactive fiction from Level 9

Three of Level 9's most acclaimed adventures – Lords of Time, Red Moon and The Price of Magik – come together in one package. Each has been enhanced and enlarged with more text than ever before – 60,000 mind-expanding words creating magik and mystery round every corner. There's a powerful new parser, and most disc versions include stunning digitised pictures that help to dramatically heighten the atmosphere.

"Three excellent games...the adventure bargain of the year" – *Your Amiga, June 88.*
"Each is a classic – so buy it". – *ST Update, July 88.*







Screen shots from Atari ST version

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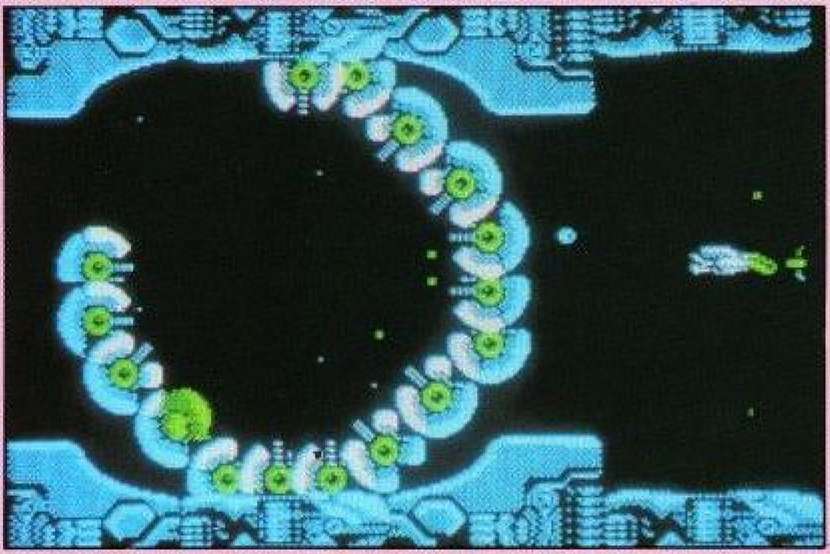
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R282

R-TYPE



LIZ

WHY are aliens always so nasty? Why don't they just try to be friends instead of invading all the time? In R-Type the aliens are the evil Bydo Empire, and a more horrible race of aliens you couldn't hope to find.

The game starts, and you guide your R-9 fighter through the smoothly scrolling landscape in the tradition of the classic Scramble arcade game.

The aliens soon attack, keeping formation dependant on their type. You soon recognise one and predict its movement – although knowing when it is going to shoot doesn't necessarily make things any easier.

Shooting at them isn't just a matter of hitting the right button – in R-Type, the longer the fire button is held down determines how powerful the eventual shot will be. Firing a powerful energy bolt will kill several aliens at once.

Some dead aliens will leave a gem for you to collect. This is where the fun really starts. Picking up the gems will arm your ship with all sorts of exciting weapons.

The first gem will give you The Force – a separate spaceship that will follow you, or attach itself to your front or rear, effectively doubling your firepower. Later gems will provide homing missiles to destroy enemy installations, reflection lasers that bounce around killing anything in their path and ground lasers which crawl over the surface.

When you have collected all these, and also have The Force flying next to you, every time you shoot the entire screen is taken up with enough firepower to destroy a small planet.

Somehow the aliens will always manage to get you, and when you get to the huge rotating ring of armed alien things, you'll need everything you can fire to stand a chance. If you survive the ring you will meet the most revolting alien you have ever seen. To kill this one you must... no, it's just too horrible to describe.

R-Type is based on the arcade game of the same name, and a darned good conversion it is too. At the start you are given five credits. Every time your game ends you can use one credit to continue from where you left off – an idea taken from the arcade version, and a stroke of genius.

The graphics are detailed Mode 1 and quite large, if not exactly colourful. The aliens look just so... well, alien. And the larger multi-segmented ones move around very fast.

The programming is excellent, the gameplay is superb and with several stages to load from tape R-Type will keep you busy for a long time.

STAR ACU GAME

ELECTRIC DREAMS SOFTWARE

Developer: In house
Tape: £9.99
Disc: £14.99

19/20

NIGEL



TYPHOON

ONCE upon a time amusement arcades were places that you went to on a wet Sunday at Margate. They were filled with mysterious machines of gothic design in battered wooden cases that sent metal balls whirling and spinning at the flick of a lever and dispensed bubble gum to the lucky winners.

These machines were operated by a swarm of grubby faced, lovable cockney urchins in baggy shorts and Fairisle pullovers who accosted unwary adults with their traditional cry of "Gi's a tanner, mister". The arcades were places of innocent, unsophisticated entertainment.

These days you need a PhD in computer science before you set foot in one. Brightly lit machines crammed with more technical wizardry than your average space shuttle dispense noisy death and destruction at all angles with ruthless efficiency.

Youngsters with more kills to their names than Von Richtofen play keypads with the skill and dexterity of a concert pianist, while anyone over the age of 21 feels more out of place than Quasimodo in a Mr Universe contest. Which is a shame because a lot of the games are jolly good fun.

The recent trend for porting the best of the arcade games on to home computers is therefore a good thing, enabling kids of a more advanced age to make complete idiots of themselves in the safety and comfort of their own homes.

Some of the best of the arcade games are produced by Konami. Now Imagine Software has produced a home version of Typhoon, a Konami favourite. This is an air-sea combat simulation which puts you in control of either a jet fighter or a well armoured helicopter gunship.

The action takes place on a number of levels against an ever-increasing array of enemy fighters and ship and ground-based missiles. Points are scored for enemy fighters and anti-aircraft turrets destroyed and for the completion of each stage.

The range of weapons available to you also varies with the level. In addition you possess one smart missile in each of your six lives. This is capable of destroying everything on the screen, including enemy bullets, and so is useful in tight situations.

Initial impressions are likely to be misleading. The first level action is mundane to say the least. However it is worth persevering because the pace soon hots up and should prove difficult enough to stretch even the most practised of players.

The graphics are detailed although the single colour presentation does tend to become a bit monotonous. The sound effects are nothing special either.

On the 464 and 664 Typhoon is a multi-load game. This does tend to break up the action, particularly if you get wiped out quickly and are constantly reloading level one. Each level, however, is soon taken aboard so the delays have been kept within acceptable limits.

Imagine ...the name of the game

Developer: Steve Lamb.
Tape: £8.95
Disc: £14.95

16/20

SOLAR WARRIOR



NIGEL

MANY years ago at the start of the 25th century – I missed that... must have overslept – the Solar Warriors protected Earth and all its baubles and trinkets by spreading them around the known universe. It is now the year 2650 and the location of all the goodies is the worst kept secret in the Solar System.

For reasons untold but pretty important to the plot, you are the only Solar Warrior left. You must zoom around all the planets to de-infest them of the bad guys, who are bent on treasure theft and general shoot-'em-up mayhem.

First mission: A choice of Pluto or Mars. The colourful enemy craft scroll in from the right, ducking, weaving, blasting and generally trying to relieve you of one of your six lives. A gentle hint of things to come.

Automatic docking with the mothership and a few seconds to get your breath back before stage two, the descent to the planet. A strange anti-gravity side-slipping motion is used here. If you don't land gently, and in the right place, it's. . .

A tricky manoeuvre, but if you are the one at parties who can balance a jelly on a broomstick while coming down the staircase on roller skates you will do well here.

Once safely on the surface you blossom out of the landing craft into a vehicle that owes its ancestry to a tank, a high-speed train and a spacehopper. With this you trundle left and right through the scrolling planetscape. The surface undulates – if you come to a pothole too wide to drive over, a wiggle on the joystick and your craft bounces across.

With radar scrolling below to tell you where the bad guys are and a wary eye for potholes, you shoot left, right and upwards at the same time. There are points for shooting everything that moves.

Once the enemy are all smitten, it's back to the menu to choose another planet and the same again, only this time a bit harder.

Mars is protected by more fighters than Pluto. They are more vicious, but predictable. After jelly-on-a-broomstick time, the landscape of Mars appears, redder and bumpier, with a lovely brand of multiplying ball out to get you.

Complete Mars and you've finished the first mission. Now it's off to visit Venus – lovely architecture, nasty surface – and the pace is really hotting up.

Venus was a devil. So was the thing with the odd name. By teatime I didn't want any tea. Just one more wave, please. Liz says the attack waves are too predictable, but that is what makes it playable for me – knowing where to skulk off and hide to avoid being, aarghhh, xrftpltxxxxed.

Graphically it's no Rembrandt, but the use of colour, particularly on the planets, is done tastefully. The landing sequence, although strange, is a refreshing challenge. The movement of the land buggy is done well, with its suspension and bouncing motion a pleasant change from the anywhere as long as it's sideways feel of many scrolling games.

LEISURETEC

Developer:
Optimus Software.
Tape: £9.95
Disc: £14.95

15/20

CORRUPTION



Gandalf

ALL you know is that your name is Derek Rogers, a financial whiz in the City. You have accepted an offer of partnership from David Rogers, no relation, who runs a well known finance house.

The job seems almost too good to be true, you just love your new BMW with its built-in everything. In the office your secretary is not exactly talkative and you do not even have your own phone. As the firm is soon moving to new premises, you are initially not that worried.

Soon little things begin to worry you. There is talk of the Fraud Squad; you are excluded from a meeting between David and the company's legal adviser.

As you look around the building, the feeling of unease grows with the discovery of a very large cheque made out to a wanted criminal.

Two attempts on your life and being framed for insider dealing are not your only worries. Is it more than a coincidence that you and your new partner are both D. Rogers?

While there is plenty to explore, the crux of Corruption is timing and character interaction. Each command causes one minute to pass. Characters move around and must be questioned for you to learn something of interest.

The packaging contains useful information in the form of sheets from a personal organiser, the usual Magnetic Scrolls coded hints, plus an audio cassette. The latter is a good example of how an innocent conversation may be used against you.

Graphics are good and concentrate on people rather than scenery.

Corruption is not an easy game to solve. Without sensible help some less than expert players may find it difficult to continue past the first few hours.

RAINBIRD

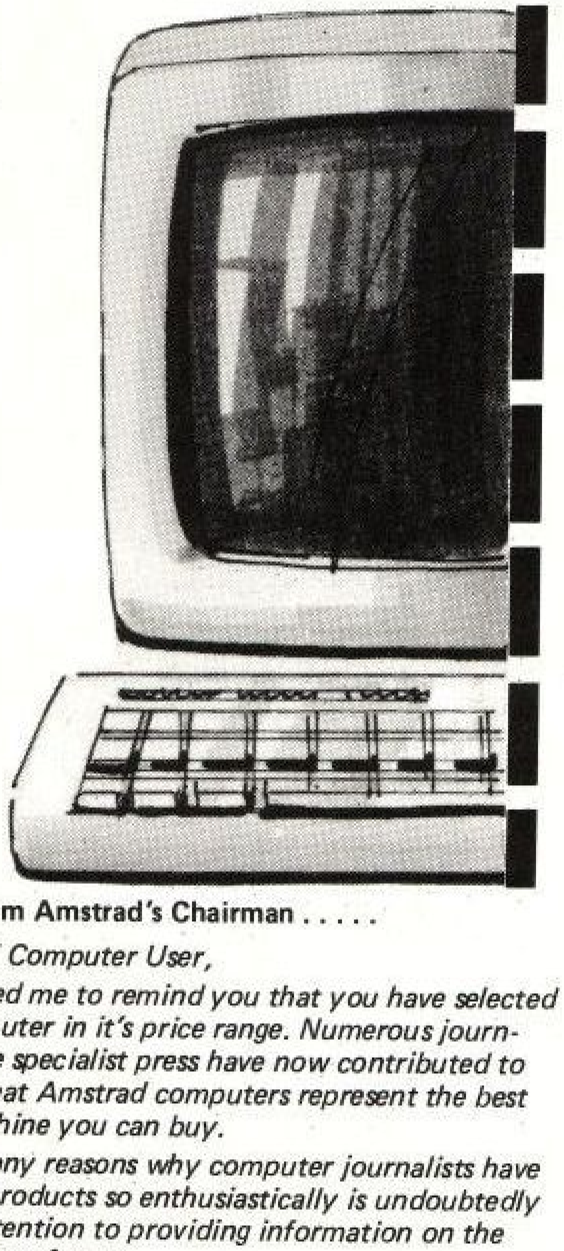
Developer:
Magnetic Scrolls.
Disc: £19.95
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PACMANIA

HOW do you revive a legend? How do you inject a dose of that certain something into a megastar whose time has been and gone? How can you make Joe Public sit up and take notice?

Well, ageing rock stars suddenly discover true commitment and involve themselves in high profile projects to "Save the Platypus". But what about the fading computer game star – the character who once haunted 1,000 monitors and banished Coronation Street from family TV screens the length and breadth of this fair land? What about Pac- Man?



The answer is simple. He becomes three-dimensional and learns to bounce.

In this new version of an old favourite you have to guide Pac-Man through the 3D maze worlds of Block Town, Pac-Man's Park, Sand Box Land and Jungly Steps. Your aim is to eat all the dots and power pills while avoiding the usual retinue of ghosts.

To make things more difficult, there are now two new ghosts to contend with, spookily named Sue and Funky.

Eating a power pill makes the ghosts temporarily change colour, allowing Pac-Man to gobble them up and earn extra points.

The green pills – which in the CPC version are the same colour as everything else but are conveniently labelled G – also give you a temporary speed boost.

The red power pills – that's R to us – award double points. Odd items of fruit which add bonus points to your score appear from time to time.

Pacmania is uncomplicated and can be played at a number of levels of difficulty – truly one for all the family. Add to this the snappy tune and the good graphics, and you have a game that is both eyecatching and fun to play.

GRANDSLAM

Developed: Teque
Tape: £8.95
Disc: £14.95

15/20

INGRID's story first started in Gnome Ranger, after she had completed her education at the Institute of Gnome Economics. She is a well-meaning gnome who strives to better not only herself but those around her as well.

Her ideas were sound, but nearly all of her efforts ended in disaster. Her progressive attitude jarred with her traditional gnomic family.

Having her around finally became too much; they gave her a magic scroll which "accidentally" transported her far, far away. Ingrid's journey home in Gnome Ranger gave us an adventure that was both amusing and devious.

Ingrid's Back begins shortly after her return. While the family is still trying to think of ways to get Ingrid out of their hair, local events overtake them.

There is a move afoot to transform Little Moaning and the Dribble Valley into a Yuppie Homes development. Jasper Quickbuck, the lord of Ridley's Manor, is the prime mover in this money-grabbing scheme, abetted by his henchman Silas Crawley.

The villagers have been conned into going to a party, thereby vacating their homes and apparently agreeing to the development. Needless to say, Ingrid is at the forefront of the battle to save the day.

The adventure is divided into three parts, all of which can be played independently. In the first, Ingrid must get all the locals to sign a petition.

Not everyone likes to be around when Ingrid is busy at something, and a certain amount of subterfuge will be necessary to get some of the signatures. The only creature that really trusts her is Flopsy the dog.

Part two brings back memories of Hitchhikers. Silas, armed with a steamroller and several trolls, sets out to steal the deeds of Ingrid's home, Gnettlefield Farm. Ingrid, again with Flopsy's help, must immobilise both the steamroller and the trolls, trying not to destroy her family in the process.

STAR ACU GAME

Having drawn a temporary halt to Jasper's plans, a final solution must be sought in part three. Ingrid goes undercover. Posing as a maid, she goes to Ridley's Manor to unearth evidence of Jasper's nefarious dealings.

Her cousin Daisy, already employed at the Manor, proves to be a willing conspirator.

The text is highly descriptive. It maintains the right atmosphere and is often very amusing. There are plenty of quality graphics. The command interpreter is similar to that used in Lancelot – in many ways better, and certainly easier to use, than that used by Magnetic Scrolls.

The flow of play is not restricted for slow typists because generally only the first four letters of a word need to be entered. The use of the arrow keys will bring back commands issued earlier, to be used again or for editing.

Ingrid's Back also makes use of Level 9's *go to* and *run to* commands so that once you have mapped out the terrain, you can go or run to wherever you want without having to enter strings of compass directions.

The instruction booklet is clear and concise and includes a few hints on Ingrid's Back and adventuring in general. No game from Level 9 is ever easy; if you get stuck, a hint sheet is available which supplies you with clues without giving too much away.

Level 9

Developed: In house
Tape: £14.95
Disc: £19.95

18/20

INGRID'S BACK



ROY OF THE ROVERS

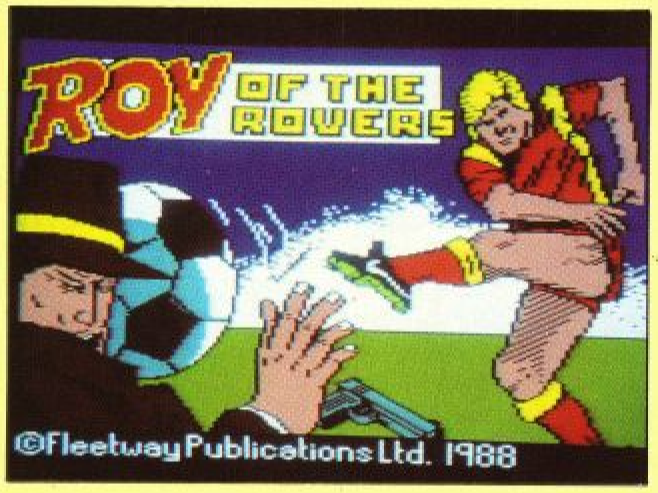
LIZ

ROY of the Rovers is a game of two halves, just like the game on which it is loosely based. Following the threat of a takeover by city property developers, Roy Race, the clean cut, comic strip hero, has organised a 5-a-side game in a bid to save Melchester's famous ground.

If the team can't raise enough money by 5pm the bulldozers will be moving in. But the team has been kidnapped, and Roy is racing against time to rescue his other four players.

He faces constant threats from booby traps, ambushes, numerous hoodlums, heavies and opposition supporters. Only Roy's mum is there to help with refreshing cups of tea.

The game is played in the streets surrounding the Melchester ground. Roy's actions are controlled through two menus, which enable him to walk, run, smile, fight and pick up, drop or use various objects. Options can be selected using the keyboard or joystick.



The classic strategies of all good adventure games are needed – exploration, character interaction, the use of collected objects at the appropriate time – and all the time the clock is ticking away.

The characters Roy meets must be approached in the correct manner if they are to be persuaded to part with information. Some will respond to Roy's charm, while with others his flashing smile produces a more robust response.

Sometimes violence is the only recourse, although if you pick a fight with the wrong man you will end up with a severe pounding and a telling off from Roy's mum.

This part of the game is great fun to play. It has been produced with refreshing style and wit.

At 5pm it is on to the match with as many players as you have been able to rescue. When it can be persuaded to load, the 5-a-side match is something of a let down, although it is slightly more fun if you are forced to play the opposition on your own.

Having said that, Roy of the Rovers is worth playing for the adventure part alone.

GREMLIN

Developer: System Applied Technology.

Tape: £9.99

Disc: £14.99

16/20

TIGER ROAD

COLIN

LONG ago, when the word Ninja meant something other than a scooter, a chap called Lee Wong had a problem. Not a problem that was brought on by the mere whiff of house dust, but a real difficulty. Some evil cuss had been kidnapping the local children, and Lee Wong was having none of it.

The aforementioned varmint was called Ryu Ken Oh, and had got the name by being the least interesting evildoer around. People just weren't interested in him. When they heard the name, they said, "Ryu Ken? Oh".

Old RKO was determined to be taken seriously, and set about building himself an army.

But no self respecting mercenary would even consider working for him, so he kidnapped children and brainwashed them.

RKO lives at the end of Tiger Road, in the big fortress just past the school. So along the road trudges our hero Lee Wong, followed closely by his large and trusty axe.

No sooner has he started than he is attacked by a troupe of Stunt Ninjas (not the scooters). In true Water Margin fashion there was one troupe of Stunt Ninjas less when The Man, Lee Wong, had passed.

Inside the fortress The Man is confronted by some rather slow giants who stand about until you hit them enough and then disappear for no adequately explained reason.

Dotted about are various goodies that can give you a sword or a mace, which are handy, or an axe, which is not. You have to attack these things to get at them. This sort of thing can be annoying in mid fight.



Once you have found your way past the slow giants, it's a mad dash along a corridor while trying to avoid large rolling brown things. I guess these are meant to be logs, but they look more like unformatted chocolate biscuits to me.

Being hit by a biscuit causes you to leap back and lose some strength. Your axe (or sword or mace) can make short work of them – it's all a matter of timing.

Now comes the standard fight with the hairy barbarian bit. The one in this game is a real nasty. He has a sneaky trick of climbing the walls to drop on you from above.

The rinky-tinky Probe tunesmith has been at work here, but the usually neat graphics aren't. They move speedily and smoothly enough, but not very prettily.

Anything purporting to be martial arts-ish should have appalling dubbing. This game just doesn't cut it by having very reasonable sound indeed. The game drops into a kind of routine after a while, and several levels are just variations on themes. That is not to say they are not fun – wasting various types of oriental warriors is always good for a lark.

It's just a pity there are no hang-gliding Ninjas, as portrayed on the cover.

Tiger Road could be classed as dab, which is not as big as brill or halibut, but it still retains most of the charms of its bigger brothers.

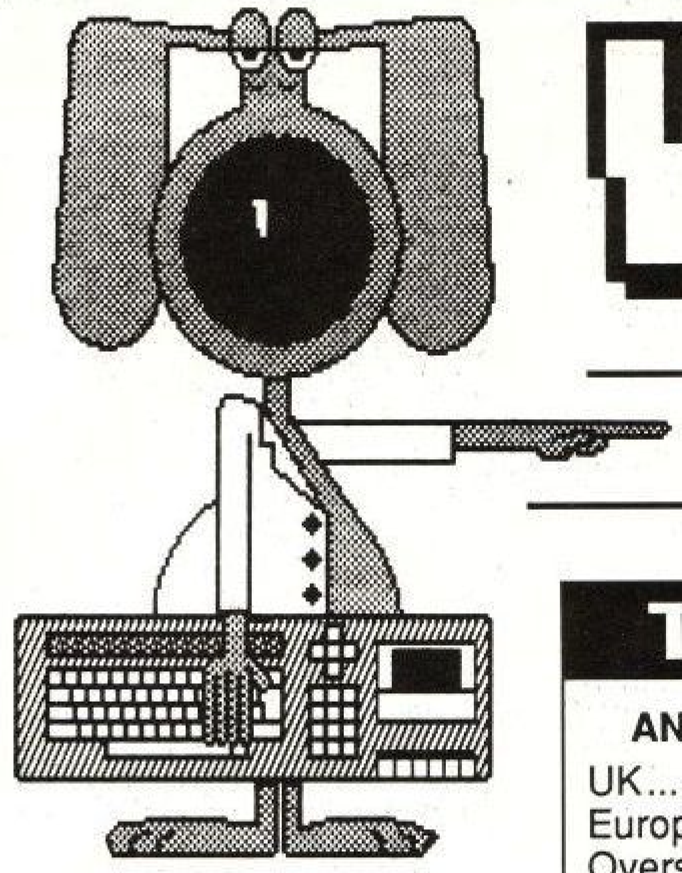
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Developer: Probe

Tape: £9.95

Disc: £14.95

14/20



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Remember that many word processors only work efficiently if you have a second disc drive. For example, the disc version of Protext needed the disc to be changed eight times to check the spelling of our test file, whereas BrunWord needed no disc in the drive.

BrunWord is supplied with a 40 page manual which has several detailed examples, starting with step by step instructions to produce and print a simple letter. But the very first step is to load the TUTOR file into BrunWord. This takes even the complete novice straight into word processing and demonstrates the powerful editing and formatting features of BrunWord. There are also examples of printer control, showing how to create headings, to underline or to emphasis, and five deliberate spelling errors for you to correct. The tutor takes about 20 minutes to run through and after that you will feel confident to type in your own text.

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This is a low cost version of BrunWord 6128 on 3 inch disc and includes the spelling checker with 30,000 word dictionary.

Type in a letter or a short essay, check it for spelling errors, save it to your disc and then print it out.

BrunWord Junior is for the CPC6128 and has all the features of BrunWord and BrunSpell but with two small changes. The text area has been reduced to hold just one page of text (about 600 words) and you cannot save words to the dictionary. It is supplied with a TUTOR file on the disc and an instruction manual.

You can upgrade later to the full BrunWord for just £12.95.

Letters

We receive many letters each month. The following were all received in the three weeks before writing this advertisement.

I am extremely pleased with BrunWord 6128, and will certainly update my copy. May I congratulate you on making such an improvement to an already excellent programme.
Mr S (Gloucestershire)

I am writing to say how much I enjoy using the BrunWord disc. It is easy to use and as I am not a good speller the dictionary is most essential. I dislike writing letters but the disc makes it easy and much more exciting.
Clare (age 12 - Herefordshire)

I wish to upgrade (BrunWord) to Info-Script. May I congratulate you once again on a superb product, without which I would be lost.
Mr L (Nottingham)

I have been using BrunWord for quite a while and like it very much. I have told my friends how good and user friendly it is. Also the speed and ease of commands. I enclose cheque for updating to Info-Script.
Mr G (Scotland)

Info-Script has got to be the best buy for Amstrad 6128 word processing. Keep up the good work.
Mr McQ (Leicester)

Info-Script £46.00

Take the BrunWord disc, replace DataFile with a comprehensive relational database, integrate this into BrunWord and the result is Info-Script.

At its simplest Info-Script is no more complex than DataFile but with the attraction of direct access from the word processor, many new and enhanced facilities and the ability to store at least twice as much data. It is possible to have the database, the word processor, 1000 names and addresses and 6 pages of text all in the memory.

You are typing a letter in BrunWord and need an address. Place an address marker &A where it is need. Go to Info-Script and search for the address, using say, the house name. Press T for Transfer and you are back in BrunWord with the marker replaced by the address.

Info-Script has powerful progressive search facilities, a unique four marker system and it can sort data alphabetically, numerically, date or reverse order. It can add, multiply or divide and any number of fields can be added into a running total, which can be inserted into one of the fields. Records can be related by two different methods, SONs or DAUGHTERs.

The data merging facilities are extensive but the simplest personalised letters require just three markers, &A &N &D. These construct a full address, a full name and insert the date.

Info-Script is easy to start but has the power to keep up with your needs.

Comparisons

We have tested BrunWord 6128, Protext (disc) and Tasword 6128 with the same file of 3366 words.

BrunWord scrolled 40% faster than Protext which in turn scrolled 19% faster than Tasword.

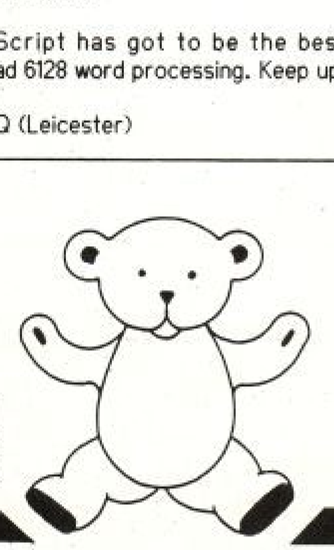
Protext was the fastest to justify but needed a separate operation to see the result. BrunWord produced the best appearance of all three and was 30 times faster than Tasword.

Our simulated typing test reached 218 words per minute. Both BrunWord and Protext had no trouble at this speed but Tasword was very slow inserting text into the start of a paragraph and could only handle 16 words/minute.

The spelling test checked all 3366 words. BrunSpell took 52 seconds and needed no disc changes. Prospell took 6 min 24 sec and needed 8 disc changes. Taspell took 18 min 46 sec and needed 3 disc changes.

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PETER PACKRAT

NIGEL

JUST before Britain's sewers crumble to brick dust, Peter Packrat makes his presence felt. This "cute little rodent" lives in a junk yard – quite a comedown from an Atari arcade machine.

Anyway, you control Peter using keyboard or joystick. You have to guide him round the junk yard and the adjoining sewers, pick up any loose bits and pieces such as gold bars (in a junk yard?) and take them back to his den, a decrepit wooden hut perched between a couple of telegraph poles.

As usual, nasty things are trying to stop Peter completing his task; they include everything from winged books, bumble bees and spiders to Riff Rat, the villain of the piece. One touch from him is fatal. The sewers contain sludge; if Peter falls in, he is immersed up to his neck and can move only very slowly.

There is a great variety of movements. Peter can stoop to negotiate ledges or enter pipes, he can slide down inclined planks, be catapulted through the air by a springboard, clamber through the spider's web, climb ladders and steps – he can even do a tightrope walk across telephone wires and jump impossible distances.

To keep the nasties at bay, he fires missiles. Accurate shots paralyse and give extra points.

Platforms and Ladders, you may say. Originality is not Peter Packrat's strong point. The playing area is rather small and the graphics, which are two colours in Mode 1 and look suspiciously like a direct port from the Spectrum, are not up to Silverbird standard. The animation is OK though, with lots of frames for the main characters.



A reasonable tune plays throughout, but it's very short – about 30 seconds – and repetitive. It tends to slow down slightly whenever lots of characters appear on the screen, and it can't be switched off. Groan.

There is a high score table. You are asked for three initials and have to select them laboriously with the joystick rather than just typing them. Green screen users will have great difficulty seeing this, but the game itself is perfectly clear.

The strangest feature is the question you are asked out of the blue on loading: "Scroll between screens? (Y/N)". If you press Y the action scrolls smoothly from screen to screen. If you press N it flicks between them almost instantaneously, speeding the gameplay up slightly.

Small playing area, tired scenario, ugly graphics, yet inexplicably addictive. Could have something to do with the price.

SILVERBIRD

Developer: Software Creations.

Tape: £1.99

10/20

NETHERWORLD

STAR ACU GAME

SUBTITLED Planet of Purgatory, Netherworld is a happy marriage between two old but immortal ideas – Boulderdash and shoot-'em-ups. You are inside a gyroscope-like spinning spaceship "in a place locked in eternal conflict where the forces of good and evil battle for complete domination".

No, its not the House of Commons, but a brick-walled maze littered with demons, goat heads and alien generators which spit deadly nasties.

There are other curiosities, such as scanner mines, bounder mines, hover mines and metamorphosis walls. Danger lies everywhere. Fortunately your ship fires in four directions at once. If it didn't, you wouldn't last long.

Your mission is to move from level to level by collecting 15 diamonds in three minutes. There are very few diamonds ready and waiting to be picked up; you have to create more.

Rocks can be pushed into squeezers, which miraculously change them into diamonds. Deflecting a mine into a metamorphosis wall transforms it into four diamonds. Eggs can be shot, giving you extra points.

Jumping into a teleport chamber or opening a secret door will transfer you to the parts of the maze that other ways cannot reach. Absolute life-savers are the hourglasses. Picking one up gives you an extra 30 seconds.

A touch of randomness is added by extra points when you shoot something and, more importantly, the surprise bonus. Denoted by a cluster of question marks, it has four effects, two good and two bad. You can get an extra life – you start with five – or infinite lives, and you can withstand 16 direct hits before you are blown up. On the other hand, the controls can be reversed or completely scrambled.

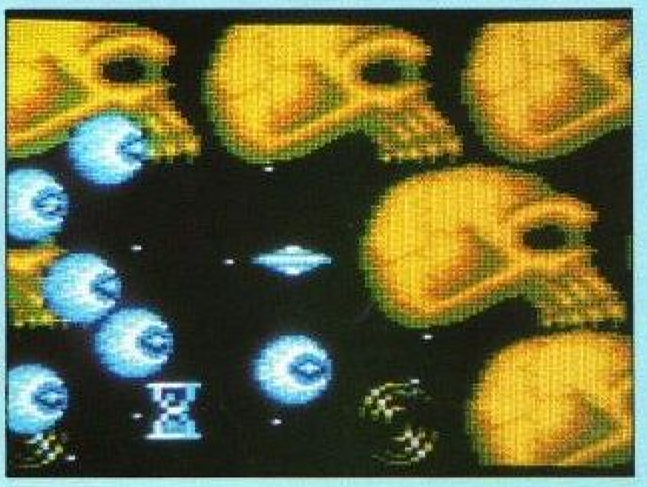
Presentation is excellent. A good loading screen and an even better title screen with stars rushing all over the place. Control is via keyboard or joystick. You can select one of four levels to start on.

The playing area is large and smooth-scrolling and the graphics are enormous – colourful with no problems in green. But the *pièce de resistance* is the musical accompaniment. It's more than just a collection of tunes. There are sound effects on one channel and the accompaniment on the other two.

The pause mode, of all things, is a revelation. You can turn the accompaniment and/or sound effects up or down. If you turn the accompaniment right off, the sound effects expand to fill all three channels. Dave Rodgers, the man behind the music, has created at least the equal of anything by the better known Rob Hubbard.

After a couple of damp squibs, Netherworld – a game born in Finland, by the way – continues the long tradition of excellent Hewson shoot 'em ups.

NIGEL



HEWSON

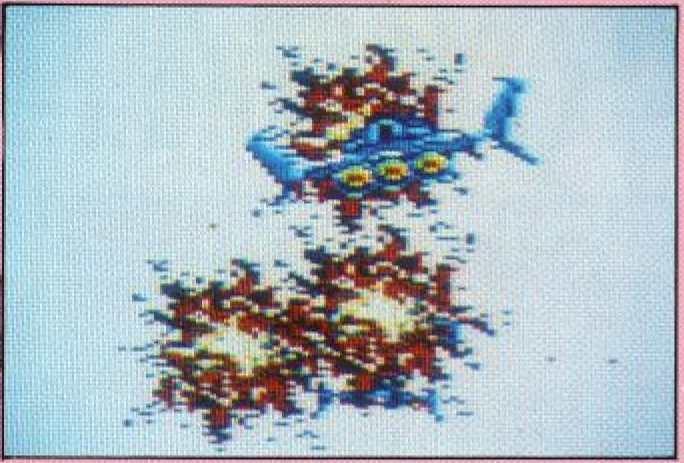
Developer: Chris Wood

Tape: £9.99

Disc: £14.99

18/20

COLIN



GALACTIC CONQUEROR

ACCORDING to the patchily translated inlay, your mission in Galactic Conqueror is to annihilate the enemies of peace throughout the galaxy. We're supposed to be peaceful then, are we? In that case the world in general would dearly love to know what those large lasers are for.

The idea is to defend a totally peaceful military base with totally harmless enormously dangerous lasers, is it? Great. Obviously being peaceful doesn't actually extend to not killing people.

Since everyone on Earth has forgotten how to be nasty to people, the impending threat of rebels with large things that go Bang! is taken seriously. Attempts to give flowers to the rebels have mostly failed. They kept the flowers. They even returned the couriers. In bits.

Some bored technicians just happened to have completed the utterly harmless ultimate fighter, Thunder Cloud II. This proves that even in the future, version ones seldom work.

Everybody, in their nice peaceable way, has forgotten how to pilot spacecraft, so you, as a power boat champion, have been chosen. Here it becomes obvious that this is a French game – such a daring piece of illogic could only be carried of with continental panache.

Rebel planets appear like zits on the galaxy map, and you can navigate your way to the planet using a faintly confusing crosshair system. After that you're on your own, kid.

The view is rather cunningly placed behind your craft, as in that ever so popular game AfterBurner. And, just like in AfterBurner, you run into visibility problems when trying to see ahead – *you* get in the way. We are talking advanced states of anger and resentment here. Various things fly and shoot at you. Missile silos launch missiles and mines try their very best to be in front of you.

Your job is to prove, with the aid of a megawatt laser, that being peaceful is much more fun than being nasty.

The blue terrain must be the sea, as there is about as much scenery as there isn't in Milton Keynes.

Once a certain number of rebels have been dispatched to rest in peace there comes the next bit. This entails doing exactly the same as before, except you can do rolls, just like in AfterBurner. Yet again there's no scenery, but everything moves very fast.

Titus goes really all out on the third stage because even the blue bit that could be the sea is dispensed with. There is only space, the final frontier.

Once you've done the third bit, guess what? Yep, go back to the start and do it all again. The ennui is overpowering.

Galactic Conqueror is almost an AfterBurner clone. They share the same good traits – speed, speed, and ..er.. that's it – and the same bad ones – poor visibility, tedium, repetitiveness. There is nothing new or exciting here, which comes as a surprise after the definitely odd and clever Titan. All in all, it's a great cure for insomnia.

TITUS™

Developer:
Titus Software

Tape: £9.95
Disc: £14.95

13/20

LIZ

AHH, this is more like it. No pretence of a plot – just shoot everything that moves. Victory Road is of the vertical scrolling variety, and quite good it is too. The action is fast, the movement smooth – both uncommon for CPC machines.

The storyline is minimal. Just try to get as far as you can up the long road ahead. You are armed with a gun and hand grenades to start with, but you can pick up flamethrowers, extra armour and better grenades if you're lucky.

Once a boomerang-like weapon made a brief appearance, but the shock of it lost me a life. These bonus features are lost if you lose one of your six lives, which can lead to some tricky situations – trapped down an alley with four vampires calls for a flamethrower at the very least.



VICTORY ROAD

Occasionally you may be transported to the den of some rather larger nasty thing, who looks and sounds like Colin with a hangover. This stage is a real test of logic and strategy. Blast it to bits as fast as you can.

Where Victory Road becomes really special is with its simultaneous two-player option. This adds another dimension to the game as you and a friend team up to get as far into the game as possible. Of course, teaming up means that you also race to the bonus features, and if perchance a hand-grenade should accidentally hit your partner just as she is about to get a flame-thrower. Well, that's life, isn't it?

The controls are slightly odd in so far as they support the Cheetah rotational joystick. I didn't get a chance to play with one of these. It would certainly add to the game. Without one, you must toggle between shooting in the direction you are running, or shooting constantly in one direction.

Minor criticisms are that you need a joystick for two people to play at once – although my mouse worked quite well – and that bullets are sometimes hard to see on a green screen.

The opening tune is pleasant, the graphics reasonable – even if the vampire does look like a flasher – and the gameplay is superb.

Imagine ..the name of the game

Developer:
Paradise Software

Tape: £8.95
Disc: £14.95

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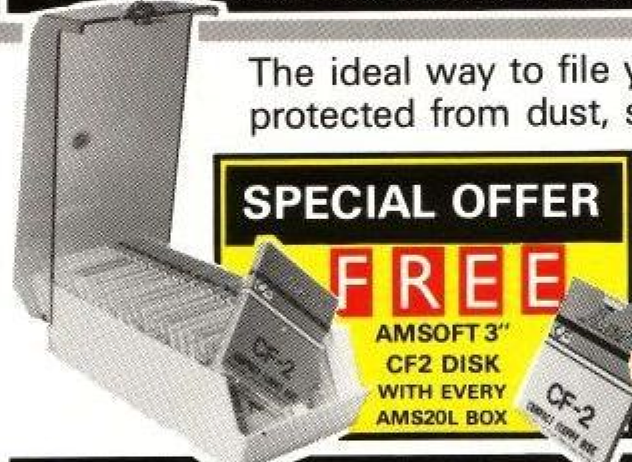
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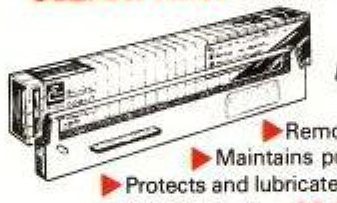
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GI HERO

NIGEL



NOT quite as jingoistic as most games based on the American armed forces, the euphemisms are flying from the first sentence on the inlay card. The game is set in a "politically sensitive country", a few hours' flight from the United States, which is composed almost entirely of jungle.

You have to capture Nato peace documents which have been stolen by a spy. You are aided and abetted by a dog called Killer who has got lost. After finding him, you can move around the map, kill the enemy soldiers, destroy their helicopter base and enter their encampment.

Various items help you, a direction finder which can latch on to radar beacons, a message decoder to receive satellite transmissions and a torch. All are selected using the now ubiquitous icon control system.

Telecomsoft's programmers seem to have a mania for representing 3D playing grids on a 2D screen with no isometric graphics to be seen; have they suddenly gone out of fashion?

GI Hero is yet another example. Point your man into the screen and press the up control to move to a different level; too bad if you get confused. Keyboard or joystick controls can be selected using the wonderfully logical Q for keyboard and A for joystick.

The impossible has been done in simulating the Spectrum's attribute problems. For those who have been lucky enough never to encounter this, our rubber friend the Spectrum can only have two colours per character square; any more and you get a mess.

Your man, and everything else that moves, has a wide black border, previously reserved for mourning cards. This is to stop the ever-so-nasty yet non-existent colour clashes.

Every graphic, without fail, is in one colour – you'd think the CPC had only the loud primary hues of the Spectrum palette, such is the subtlety with which they have been chosen. The sole advantage of this is that there is no problem in green.

After getting up – I fell off the chair laughing – I would say GI Hero would be passable if the program simulated mud wrestling rather than the work of a trained assassin. The graphics are very large, very slow moving, and very jerky.

The tune is the *de rigeur* impersonation of rock music, with a few more beeps than normal betraying its ancestry. Sound effects are limited to a few desultory bangs and crashes.

This game isn't good enough. Not even at budget price. Which it isn't.

FIREBIRD

Developer:
Bitter Animations
Tape: £8.95
Disc: £14.95

5/20

A SIMPLE CASE OF ESPIONAGE

AS private investigator Rick Shaw you are summoned to the house of a lady who is convinced that her husband, Mr Kingsley, is being unfaithful. The first few moves set the scenario for the game. As the plot unfolds, Mr Kingsley spends his time not in the arms of a floosie but trafficking in recreational narcotics.

Showing a surprising lack of honour to the client or the fat fee she holds, you have to go back to her house in the middle of the night and burgle it. A limited parser lets the game down here, with the most obvious things being done in the most obscure way.

There are about 90 locations split into four areas. Starting at the Kingsley house, it took me some time to realise that careful self-searching was needed to find the number of the local taxi firm.

As there is no car, bus, bicycle – or even rickshaw – it's the taxi that gets you between the four areas. With no cash in sight, it's a good job this cab firm knows you well enough to take a cheque.

To complete the game it is necessary to collect four pieces of evidence within a time limit and present them to a sergeant at the police station, a kindly man who will jail you if at any time you take your clothes off or vandalise a fruit machine in the pub.

A trip to the camera shop brings you face to face with Mr Kingsley, and if you're quick enough you can follow him to take a photo of him and the gang up to dirty deeds. A careful choice of camera and another delve into the cheque book should help here.

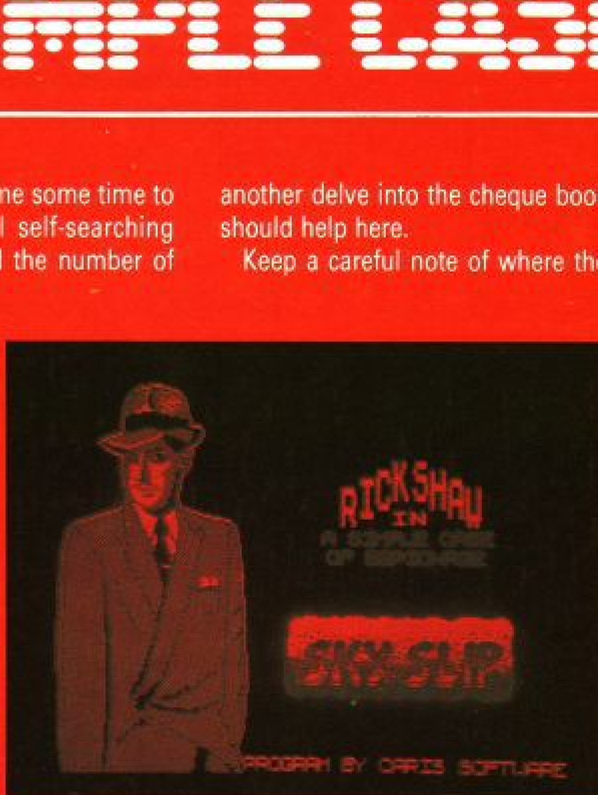
Keep a careful note of where the telephone boxes are, because this is your only way to call a taxi. They don't cruise around looking for fares.

The phone box on the industrial estate gets vandalised after one use and you have to break into a factory to use a phone. From then you have 10 moves to phone and get out or it's arrest and jail. All of this taxi travel can be wearing on the cheque book so a visit to the bank for a new one may be needed.

I enjoyed playing Rick Shaw, who despite his difficulty communicating and his lack of ethics, was a refreshing change. No doubt when he reappears in the next game the parser will be more dynamic, which will help the gameplay.

Not too difficult, not too many locations, this is a worthy text-only task for both a novice and a regular player. An adventure fanatic might find it a little limited but, as they say, size isn't everything. . .





LEISURETEC

Developer:
Caris Software.
Tape: £9.95
Disc: £14.95

16/20

ROMANTIC ROBOT present

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That alone would have satisfied many people, but Romantic Robot has gone one step further, incorporating a memory editor. No program is safe with this: everything is out in the open, including the Z80 registers, CRTC data and any part of memory.

Don't be fooled into thinking this will result in mass piracy, however. The *Multiface* unit itself must be plugged into your Amstrad to allow reloading of a program it saved.

Multiface II must be the cleverest hardware device at present – a necessity for disk owners who thought they were stuck with loading from tape every time.

AMSTRAD ACTION JANUARY 1987

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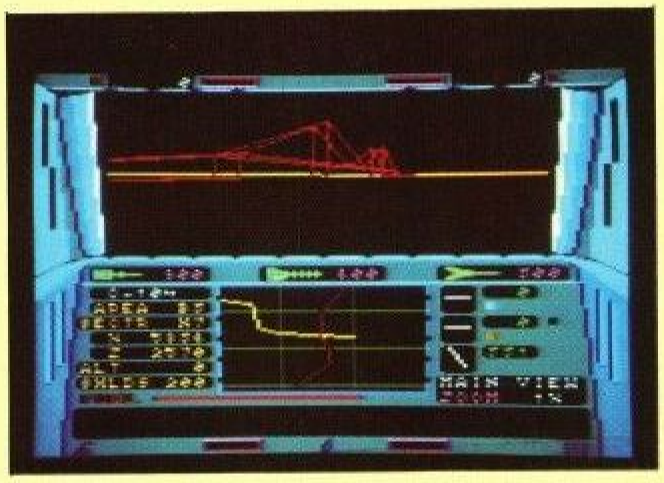
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ECHELON



LIZ

ECHELON promises a 3D space exploration and a combat flight simulator. The manual was written for the Commodore 64 version, so it has sections which are irrelevant and downright misleading.

Although you are supplied with a small piece of card with the CPC keys, several options – such as the timer – appear to be missing.

The controls are awkward. Forward thrust is applied by pressing Shift and the key for up. What's wrong with a separate thrust key? Emergency stop is selected by pressing the spacebar. Now there's realism for you – coming to an immediate stop from several kilometres per second.

A brief history of the universe is supplied, which tries to explain the complicated plot based on pirates and the good old Federation. It would appear that you are on the side of the Federation and must track down their base by collecting objects and constructing a map.

The graphics are Mode 0, colourful and chunky. The display is very disappointing compared to the screen shots on the box. The update time is slow. If this really annoys you the program allows several features to be left out to speed things up – an interesting approach to programming.

The radar display is appalling. After Elite, anything that doesn't give you an indication of the height of the enemy, or requires constant referral to a compass, is a Bad Thing.

A vehicle can be dropped to the ground. You can drive around in it and watch your own spaceship fly away without you. The explorable universe is large and reasonably detailed. Several training zones are supplied, which is a good idea.

As an extra feature the program crashes if you use up all the ammunition. This is a bug that really should have been found and fixed at the play-testing stage. It's very obvious, and darned annoying.

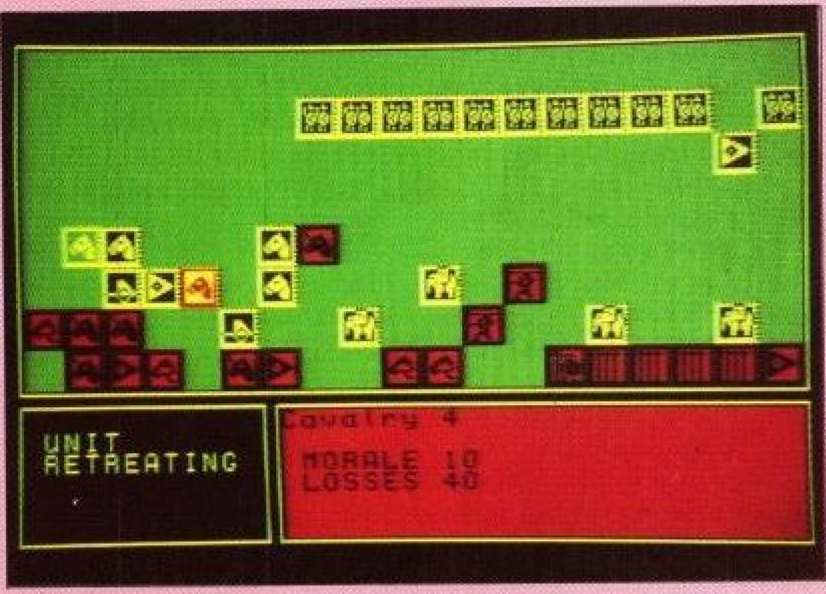
U.S. GOLD
All American Software

Developer: Access Software.

Tape: £12.99

Disc: £14.99

12/20



ANCIENT BATTLES

FOLLOWING on from Vulcan, Arnhem and Desert Rats, Ancient Battles lets you fight battles from 3000 BC to AD 700. The battle notes take you from the Hittites to the Visigoths. Details of equipment and small inset maps of campaign routes are included.

There are two tapes, one with the battle and selection programs on and the other with army lists and scenarios.

There are infinite possibilities to the seasoned wargamer and in the great tradition of wargaming, every option is open to modification. Whether you want to fight the battles as they were fought historically or make modifications to see what would have happened, this is the place to do it.

To see how pure logic works on a situation, the ability to let the computer play both sides comes in handy – as well as being entertaining, it is a useful way to plan tactics.

Once a battle is underway it is possible to change the number of players, the length of battle, whether it is night, the visibility level and deployment of troops. The normal option to save a battle for continuing later is there, and a battle can be terminated and de-briefed at any time.

The de-brief is a statistical display of the situation so far, showing forces and losses for both sides. The information is presented in the same way as the summary at the end of a battle, but while an aid to the players, it isn't an accurate feature unless the Huns had two-way radio and databases.

One thing I find uncomfortable with this and many other wargames is giving orders when only one player can look at the screen at a time. This is a very tacky way of solving the confidentiality problem.

If you venture away from the provided scenarios and into the realms of setting up your own battles, you can decide on how many points each battle will be, with rough guides to the time taken for point levels provided.

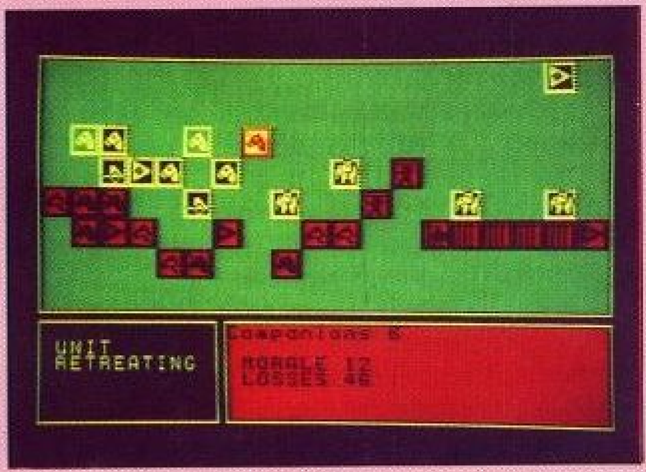
An option for unlimited battles is included, but as you increase the size of the battle and the number of units the thumbtwiddle ratio increases because the computer has to do individual calculations for the visibility of each unit.

When players have decided which country to belong to, it's off to the army lists to choose from the available forces. With the 24 nations and the scenarios provided it won't be long before you are designing maps, trying out different troops in different terrain and for anyone proficient in POKEing and PEEKing, new army lists shouldn't be a problem. Details on the construction of army lists are available from CCS if you send them a stamped addressed envelope.

Battle is what it's all about and, once engrossed in Hun-bashing, the time soon dwindles away with one hour becoming another, and so on. Plus there is always the, "I wonder what would have happened if. . ."

Not as high a tension factor as some of the earlier games from this author, but the meticulous attention to detail gives Ancient Battles a place on the shelf of any wargamer.

NIGEL

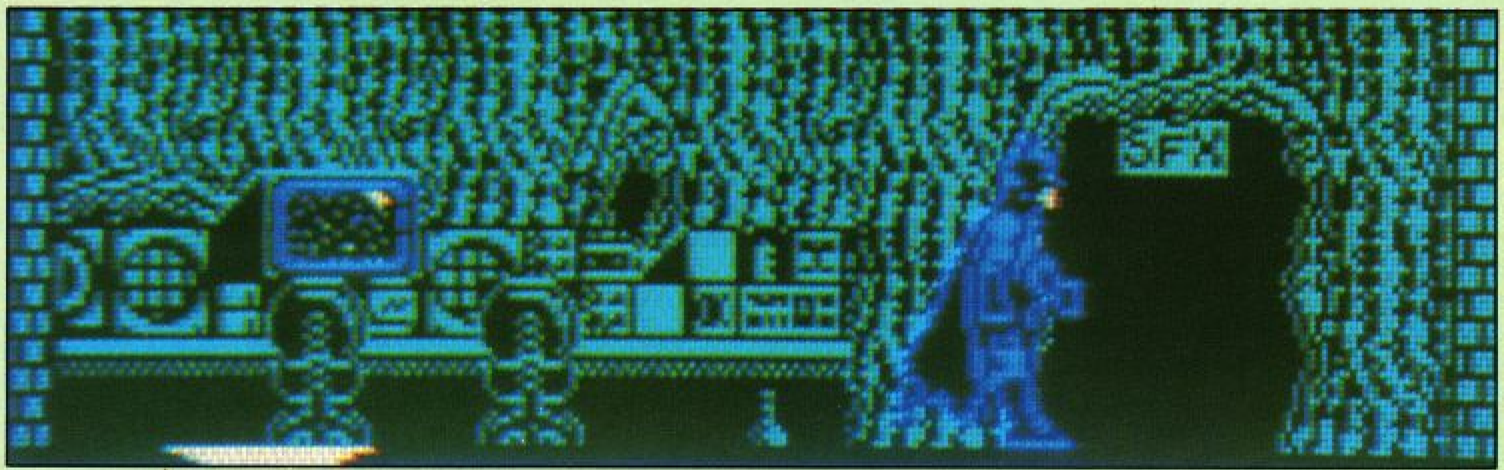


Developer: Bob Smith

Tape: £14.95

15/20

THE CAPED CRUSADER



COLIN

STAR ACU GAME

IT'S oh so trendy to like the 'sixties trash TV stuff at the moment. Probably because there are still warehouses full of original promo junk that needs shifting. That's enough cynicism... for the moment, at least.

Long ago, when isometrics were still slightly in vogue, Batman appeared as a very successful Ocean game. Now windowing is the NBT (hype marketing term – Next Big Thing) so Batman The Caped Crusader has it. It also has a fairly simple and usable icon system, but all will be revealed in good time.

You really get two games for your dosh, since there are two separately loading scenarios. The first game, which is possibly slightly easier, features that avian felon The Penguin. It is called A Bird in the Hand, and in it he plans to take over the world using his robotic penguins.

The umbrella factory where these are made is guarded by skinhead henchmen and Penguin clones, so getting in loses a fair amount of energy. Nobody dies in this game. They get kicked about a bit, though.

The second game. A Fete Worse Than Death, has that cheeky chappie The Joker in it. Robin has gone missing – no loss, you cry – and only The Joker can be to blame. He's planted charges under the Batcave, so you could go out with a bang.

Choosing and using the right objects – not to mention finding them – is critical. Thankfully most objects can only be used in the correct location, so you can't waste them. Note the "most", the vital object in the first game can be used anywhere.

The authors, Special FX, have spent some time refining the option screen, which all runs together nicely. Changing between action and option screens gives a very flash Batfade, as seen in the TV show. The graphics, although very neat and fast, are a bit dull, hinting at a Spectrum ancestry. This isn't necessarily bad, but it dulls the game's polish.

Two tunes exist in both games. Both are good, and all the better for being switchable. Neither are the Dinna Dinna tune. Fast and Loud music merchants have made this tune a folk anthem, and you kind of miss it after a while.

The screens are drawn up in windows which overlay the previous screen. This is done well enough so you don't realise that the playing area is usually very tiny. Some screens are captioned, and these give very obvious clues as to what object to use there. This is really handy because your average *ACU* games reviewer is thick as mince, and needs all the help she can get.

Batman The Caped Crusader will suit riddlers of all ages. It's pretty yet tacky, clever yet crass, logical yet wacky, but most of all it's fun. Definitely better than the cost of four of five mediocre budget games.

ocean

Developer: Special FX.
Tape: £9.95
Disc: £14.95

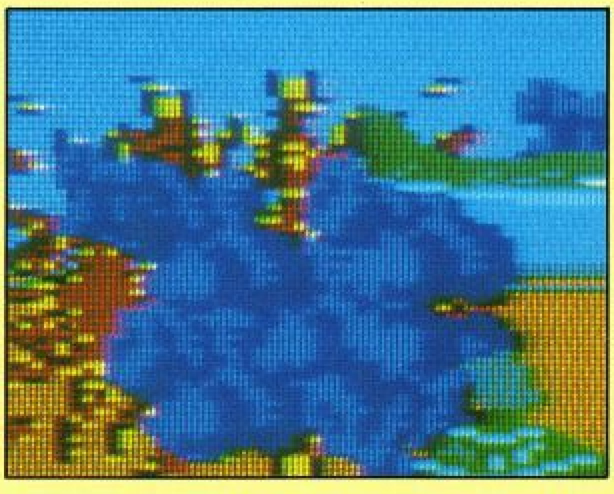
18/20

OPERATION HORMUZ

YOUR mission is to destroy seven missile bases using your McDonald-Douglas VTOL ground attack jet, the American version of the British Harrier jump-jet. After leaving your carrier you battle your way inland toward the enemy bases, which must be dive bombed, head back to the carrier, refuel and re-arm.

Then you take off and go and blow up another base. You have three harriers to complete the mission. These are lost if you crash, if you are hit by enemy fire or if your carrier is hit.

The enemy will respond with anti-aircraft fire from the ground and air-to-air missiles from MIG 21s. You can release flares to confuse the enemy's heat-seeking missiles and fire your own missiles at the MIGs.



The weapons you are supplied with consist of ordinary cannons, air-to-air missiles, air-to-ship missiles and bombs. Occasionally an Exocet missile will hurtle past and destroy your carrier.

It is generally a good idea to shoot these, but I'm sure destroying Exocets with cannon fire does not back up the game's claim of a realistic and highly detailed simulation.

Controlling the plane is very difficult. Pulling the joystick back will not send you into the clear blue yonder but into a crater on the ground. Left or right sometimes changes the direction you are flying in and sometimes causes you to loop-the-loop.

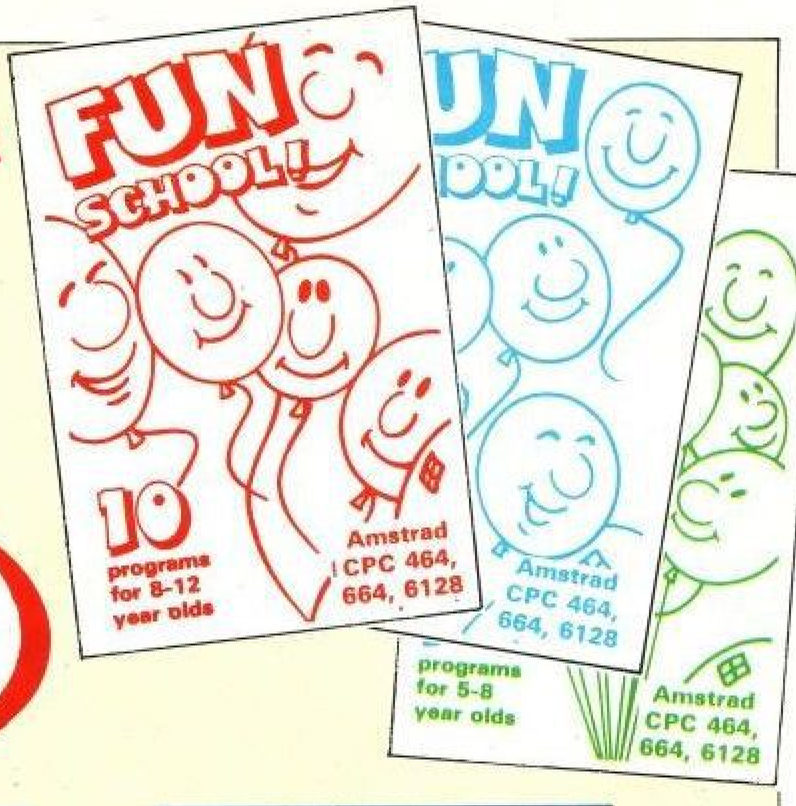
Operation Hormuz is not aimed at the wargame or simulation crowd, yet it doesn't have the variation or excitement to make a good shoot-'em-up. It sort of got lost along the way somewhere.

AGAIN AGAIN

Developer: Durrell.
Tape: £9.99
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11/20

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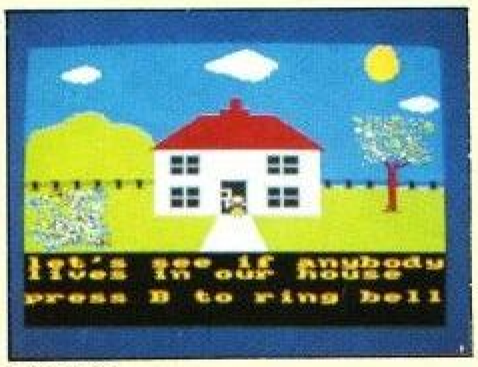
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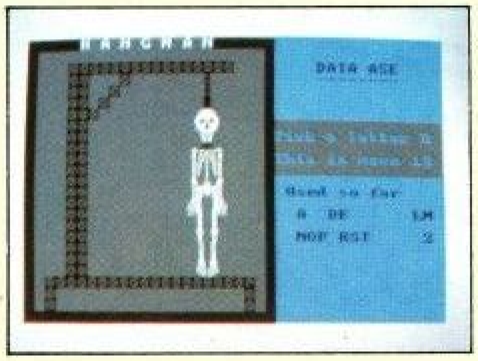
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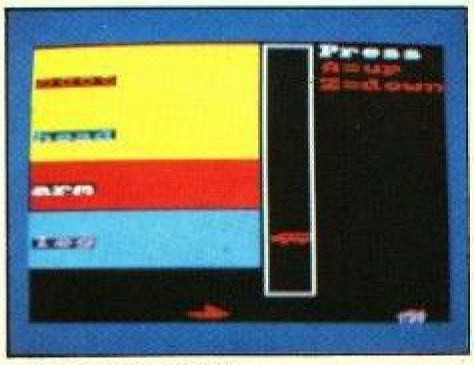
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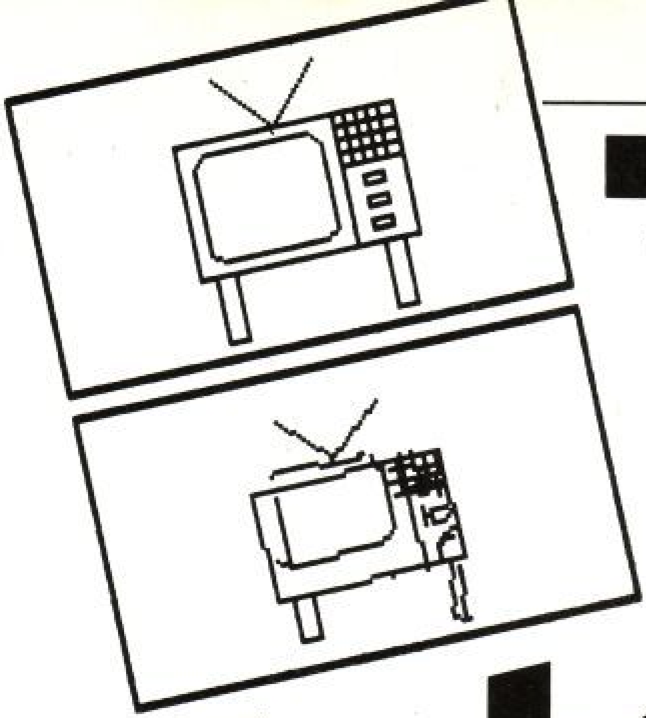
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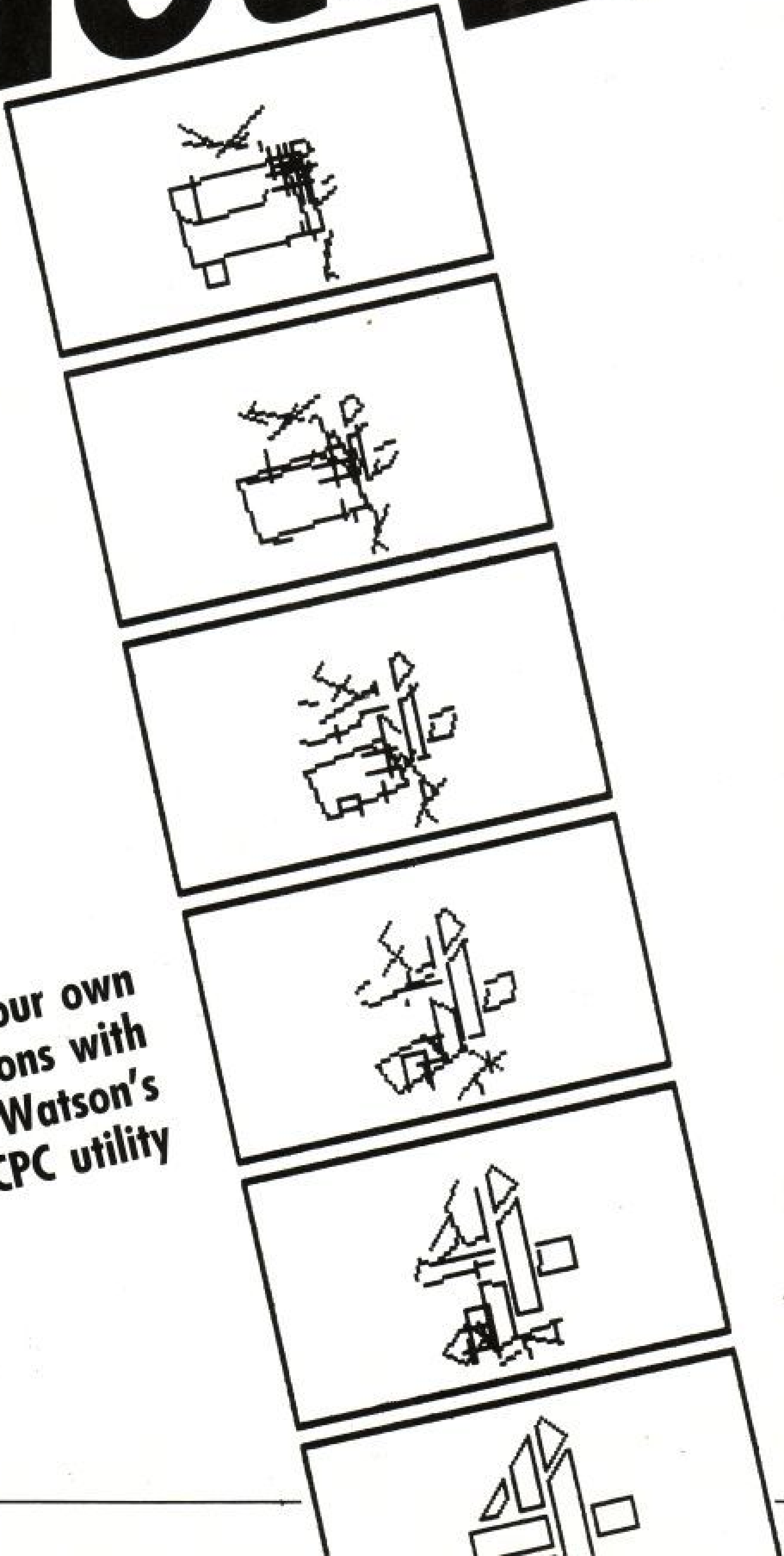
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ACU3



Metamorph



Create your own animations with Simon Watson's CPC utility

THIS program is designed to show how one picture can be transformed into another with a smooth transition. Of course, the easiest way would be to simply flick between the two frames, but this is hardly smooth, and definitely not pleasing to the eye. What is needed is a series of frames to go in between the originals, using a technique called tweening to create a smooth animation sequence.

The first frame we draw needs to be split up into its component lines and re-assembled as the second frame. One way of doing this would be to use a conventional art package to draw each frame by hand. This would be immensely time consuming and not very mathematical.

The method Metamorphosis adopts is to assume that each line in the first frame has a partner in the second. Of course, if this were literally true we would have the limitation of both frames needing an identical number of lines, which would make life very difficult. To get around this, the computer makes the frame with the most lines Frame I and the other Frame II.

Each line in Frame I is given a partner in Frame II. When all the lines in Frame II have been used up, the computer goes back to the start of this frame again. In practice, all this means is that some lines appear to converge on the same spot.

Once this process has been completed it is just a matter of building up the frames in between. Metamorphosis uses a complete cycle of eight frames. Therefore the distance between the two points of a line and its partner is calculated and divided by eight. This gives us a series of numbers that are added on repeatedly to build up the individual frames.

This may all seem very complicated, but it is completely transparent to the user. The only details you are required to supply are the starting and finishing frames.

On running the listing you will be presented with a six-option menu:

- **Create Design:** Used for drawing your two frames. Move the crosshairs with the cursor keys and press the spacebar to plot the start and end of each line. When you are satisfied with your creation, press F and repeat the process for the second frame. At any time you can return to the main menu by pressing Q. This will not corrupt the current design in memory, but will abort the frames you were working on. Each frame may consist of up to 64 lines.
- **Animate Design:** Once you've completed

osis

```
[F1] 10 ' Metamorphosis
[F2] 20 ' by Simon Watson
[F3] 30 '
[E2] 40 ON ERROR GOTO 90
[D9] 50 GOSUB 400:GOSUB 2490
[F6] 60 '
[F7] 70 ' Menu
[F8] 80 '
[D4] 90 PAPER 0:PEN 1:CLS
[E3] 100 LOCATE 18,3:PRINT"Menu"
[4B] 110 LOCATE 18,4:PRINT"----"
[37] 120 PEN 2
[F7] 130 LOCATE 12,7
[C5] 140 PRINT"(1) Create design"
[19] 150 LOCATE 12,9
[7B] 160 PRINT"(2) Animate design"
[D5] 170 LOCATE 12,11
[F6] 180 PRINT"(3) Load design"
[F9] 190 LOCATE 12,13
[F3] 200 PRINT"(4) Save design"
[0A] 210 LOCATE 12,15
[E6] 220 PRINT"(5) Catalogue disc"
[2E] 230 LOCATE 12,17
[74] 240 PRINT"(6) Exit program"
[54] 250 PEN 1:LOCATE 12,20
[64] 260 PRINT"Select (1) to (6)"
[A2] 270 PEN 3:LOCATE 5,24
[64] 280 PRINT"By Simon Watson";
[CA] 290 PRINT" - (c) 1989 ACU"
[A3] 300 PAPER 0:PEN 1:CALL &BB03
[59] 310 z$=UPPER$(INKEY$)
[94] 320 IF z$=""THEN 310
[E8] 330 z=ASC(z$)-48
[F6] 340 IF z<1 OR z>6 THEN 310
[1E] 350 ON z GOTO 540,1710,2050,2210
     ,2360,2430
[F8] 360 END
[B1] 370 '
[B3] 380 ' Initialise
[B5] 390 '
[AD] 400 MODE 1
[E5] 410 PAPER 0:BORDER 1
[CE] 420 INK 0,1:INK 1,24
[D5] 430 INK 2,13:INK 3,6
[F2] 440 WINDOW#1,12,27,8,15
[00] 450 PEN 3:LOCATE 11,1
[70] 460 PRINT"** METAMORPHOSIS **"
[96] 470 WINDOW 1,80,2,25
[89] 480 DIM d(7,63)
[E5] 490 c=&5000
[05] 500 FOR n=1 TO 8:loc(n)=c
[3C] 510 c=c+&800:NEXT
[C3] 520 RETURN
[AB] 530 '
[AD] 540 ' Create Design
[AF] 550 '
[62] 560 CLS:GOSUB 780
[E9] 570 PEN 2:LOCATE 12,17
[16] 580 PRINT CHR$(240);CHR$(242);
[46] 590 PRINT CHR$(241);CHR$(243);
[F2] 600 PRINT" - Movement"
[4E] 610 LOCATE 12,19
[2C] 620 PRINT"SPACE - Plot line"
[E1] 630 LOCATE 12,21
[C6] 640 PRINT"F - Finish Frame"
[05] 650 LOCATE 12,23
[90] 660 PRINT"Q - Quit":PEN 1
[13] 670 FOR f=1 TO 2
[F1] 680 LOCATE 15,3
[0A] 690 PRINT"Frame :";f
[EC] 700 st=(f*4)-4
[D9] 710 GOSUB 850
[2C] 720 count(f)=c
[39] 730 NEXT
[45] 740 PRINT CHR$(23)+CHR$(0)
[64] 750 GOSUB 1240
[B1] 760 GOSUB 1570
[CC] 770 GOTO 70
[B7] 780 '
[B9] 790 ' Draw Box
[A8] 800 '
[F5] 810 MOVE 172,290
[57] 820 DRAWR 262,0,3:DRAWR 0,-134
[16] 830 DRAWR -262,0:DRAWR 0,134
[CA] 840 RETURN
[B2] 850 '
[B4] 860 ' Draw Frame
[B6] 870 '
[B4] 880 CLS#1:flag=0:c=0
[A4] 890 x=200:y=200:x1=x:y1=y
[58] 900 PRINT CHR$(23)+CHR$(1)
[2A] 910 GOSUB 1200
[7A] 920 IF INKEY(0)>-1 AND y<286 THE
     N y=y1+2
[20] 930 IF INKEY(2)>-1 AND y>160 THE
     N y=y1-2
[D9] 940 IF INKEY(8)>-1 AND x>176 THE
     N x=x1-2
[33] 950 IF INKEY(1)>-1 AND x<430 THE
     N x=x1+2
[AA] 960 IF INKEY(67)>-1 THEN 70
[D8] 970 IF INKEY(53)=-1 THEN 990
[8F] 980 IF INKEY(53)=-1 THEN RETURN
     ELSE 980
[46] 990 IF INKEY(47)=-1 THEN 1130
[92] 1000 IF flag=1 THEN 1040
[12] 1010 flag=1:ox=x:oy=y
[7C] 1020 d(st+0,c)=x:d(st+1,c)=y
[28] 1030 GOTO 1110
[06] 1040 GOSUB 1200:LOCATE 1,1
[B7] 1050 PRINT CHR$(23)+CHR$(0)
[1A] 1060 MOVE ox,oy:DRAW x,y,1
[D7] 1070 PRINT CHR$(23)+CHR$(1)
[D2] 1080 d(st+2,c)=x:d(st+3,c)=y
[F3] 1090 c=c+1:IF c=64 THEN RETURN
[63] 1100 GOSUB 1200:flag=0
[23] 1110 IF INKEY(47)>-1 THEN 1110
[D4] 1120 IF x=x1 AND y=y1 THEN 920
[3D] 1130 IF flag=1 THEN MOVE ox,oy:D
     RAW x1,y1,1
[82] 1140 IF flag=1 THEN MOVE ox,oy:D
     RAW x,y,1
[34] 1150 GOSUB 1200
[23] 1160 MOVE x,286:DRAWR 0,-126
[0B] 1170 MOVE 176,y:DRAWR 254,0
[3C] 1180 x1=x:y1=y
[D3] 1190 GOTO 920
[5D] 1200 MOVE x1,286:DRAWR 0,-126,2
[9C] 1210 MOVE 176,y1:DRAWR 254,0
[65] 1220 RETURN
[8E] 1230 '
[91] 1240 ' Process Data
[94] 1250 '
[8D] 1260 CLS#1:PEN 1
[82] 1270 LOCATE 15,10
[13] 1280 PRINT"Processing"
[AA] 1290 LOCATE 15,12
[A9] 1300 PRINT"   Data"
[E8] 1310 POKE &3FFF,123
[71] 1320 IF count(1)>=count(2) THEN
     1420
[11] 1330 FOR n1=0 TO 63
[00] 1340 FOR n2=0 TO 3
[AE] 1350 t=d(n2,n1)
[42] 1360 d(n2,n1)=d(n2+4,n1)
[A7] 1370 d(n2+4,n1)=t
[D4] 1380 NEXT:NEXT
[DD] 1390 t=count(1)
[DB] 1400 count(1)=count(2)
[3C] 1410 count(2)=t
[62] 1420 IF count(1)=count(2) THEN 1
     480
[75] 1430 c=count(2)
[AA] 1440 FOR n1=count(2) TO count(1)
     -1
[81] 1450 FOR n2=4 TO 7
[30] 1460 d(n2,n1)=d(n2,n1-c)
[D3] 1470 NEXT:NEXT
[AD] 1480 count=count(1)
[45] 1490 FOR n1=0 TO count
[74] 1500 FOR n2=4 TO 7
[76] 1510 d(n2,n1)=(d(n2,n1)-d(n2-4,n
     1))/7
[C6] 1520 NEXT:NEXT
[6E] 1530 RETURN
[97] 1540 '
```

option one, or loaded a previously saved design, you can select this option. Your current design will be animated before your very eyes at medium speed. To see just what the program is capable of, press 3 to select fast speed. If you want to study the frames more closely press 1 for slow speed. To return to the main menu press Q.

- **Load design:** Type in the filename – up to eight characters – and press Return. The computer will then attempt to load this saved design.
- **Save design:** Can be used to save your current design to tape or disc, which can be recalled later with option three. Again, the filename can be up to eight characters long.
- **Catalogue disc:** Shows all the designs on the disc in the current drive. Not available for tape.
- **Exit Program:** Returns the user to Basic. Note that the Escape key is disabled throughout the program. To get a feel for the program, draw something very simple the first time – say a square at bottom left for Frame I and a square at top right for Frame II.

The machine code data at line 2650 sets up two bar commands, |STORE and |RECALL. The | (bar) character before these commands is typed by holding down Shift and pressing the @ key, which you'll find just to the right of the P key.

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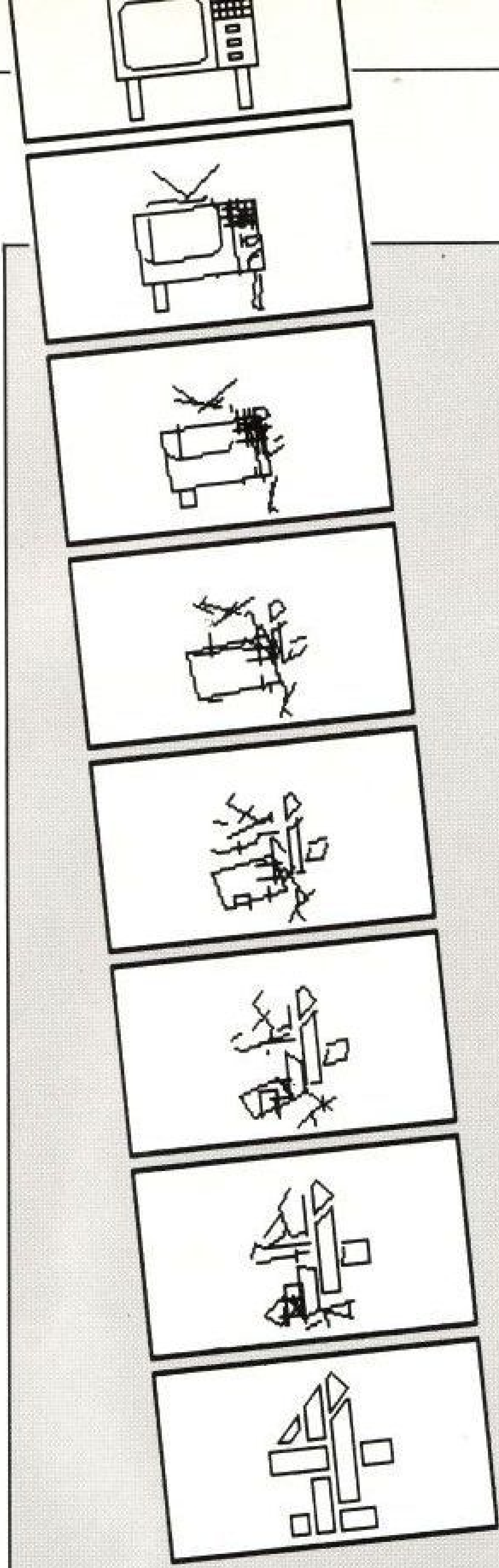
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LIZTING

```
[9A] 1550 ' Store Frames
[9D] 1560 '
[CC] 1570 CLS:GOSUB 780
[FB] 1580 FOR f=0 TO 7
[D8] 1590 FOR n=0 TO count-1
[58] 1600 x1=d(0,n):y1=d(1,n)
[B3] 1610 x2=d(2,n):y2=d(3,n)
[93] 1620 dx1=d(4,n):dy1=d(5,n)
[F7] 1630 dx2=d(6,n):dy2=d(7,n)
[24] 1640 MOVE x1+(dx1*f),y1+(dy1*f)
[61] 1650 DRAW x2+(dx2*f),y2+(dy2*f),
     1
[0A] 1660 NEXT
[2F] 1670 |STORE,loc(f+1)
[CB] 1680 CLS#1:NEXT
[82] 1690 RETURN
[8F] 1700 '
[92] 1710 ' Animation
[95] 1720 '
[C4] 1730 CLS:GOSUB 780
[8D] 1740 del=10:
[B3] 1750 PEN 1:LOCATE 16,3
[4B] 1760 PRINT"Animation"
[94] 1770 PEN 2:LOCATE 15,17
[12] 1780 PRINT"1 - Slow"
[2B] 1790 LOCATE 15,19
[FA] 1800 PRINT"2 - Medium"
[9D] 1810 LOCATE 15,21
[9E] 1820 PRINT"3 - Fast"
[C5] 1830 LOCATE 15,23
[DC] 1840 PRINT"Q - Quit"
[15] 1850 FOR f=1 TO 8
[FE] 1860 |RECALL,loc(f)
[89] 1870 GOSUB 1950:NEXT
[D4] 1880 GOSUB 1950:GOSUB 1950
[43] 1890 FOR f=8 TO 1 STEP-1
[EE] 1900 |RECALL,loc(f)
[79] 1910 GOSUB 1950:NEXT
[C4] 1920 GOSUB 1950:GOSUB 1950
[C2] 1930 GOTO 1850
[9F] 1940 '
[A2] 1950 ' Delay
[A5] 1960 '
[BF] 1970 FOR p=0 TO del
[27] 1980 IF INKEY(64)>-1 THEN del=50
[BE] 1990 IF INKEY(65)>-1 THEN del=10
[64] 2000 IF INKEY(57)>-1 THEN del=0
[59] 2010 IF INKEY(67)>-1 THEN 70
[F3] 2020 NEXT
[65] 2030 RETURN
[8E] 2040 '
[91] 2050 ' Load Design
[94] 2060 '
[9A] 2070 CLS:PEN 2
[66] 2080 LOCATE 13,10
[99] 2090 INPUT"Filename";f$
[7A] 2100 f$=MID$(f$,1,8)+".des"
[91] 2110 OPENIN f$
[A1] 2120 INPUT#9,count
[11] 2130 FOR n1=0 TO count-1
[45] 2140 FOR n2=0 TO 7
[CE] 2150 INPUT#9,d(n2,n1)
[CB] 2160 NEXT:NEXT
[9F] 2170 CLOSEIN
[C7] 2180 GOSUB 1570
[16] 2190 GOTO 70
[86] 2200 '
[89] 2210 ' Save Design
[8C] 2220 '
[92] 2230 CLS:PEN 2
[5E] 2240 LOCATE 13,10
[91] 2250 INPUT"Filename";f$
[8E] 2260 f$=MID$(f$,1,8)+".des"
[68] 2270 OPENOUT f$
[4E] 2280 WRITE#9,count
[25] 2290 FOR n1=0 TO count-1
[3D] 2300 FOR n2=0 TO 7
[5F] 2310 WRITE#9,d(n2,n1)
[C3] 2320 NEXT:NEXT
[31] 2330 CLOSEOUT
[0B] 2340 GOTO 70
[97] 2350 '
[9A] 2360 ' Catalogue Disc
[9D] 2370 '
[95] 2380 CLS:PEN 1
[D6] 2390 afn$="*.des":DIR,@afn$
[A8] 2400 WHILE INKEY$="":WEND
[04] 2410 GOTO 70
[90] 2420 '
[93] 2430 ' Exit Program
[96] 2440 '
[CD] 2450 CALL &BC02
[F8] 2460 CALL &BB4E
[02] 2470 MODE 2:END
[A2] 2480 '
[A5] 2490 ' Machine code loader
[8C] 2500 '
[91] 2510 IF PEEK(&416C)=132 THEN RET
     URN
[EB] 2520 RESTORE 2650
[29] 2530 MEMORY &3FFE:addr=&4000
[68] 2540 FOR a%=2650 TO 2950 STEP 10
[A3] 2550 total=0:FOR b%=1 TO 12
[41] 2560 READ byte$
[DB] 2570 byte=VAL("&"+byte$)
[7C] 2580 chk=chk+byte
[84] 2590 POKE addr,byte
[F4] 2600 addr=addr+1
[FE] 2610 total=total+byte:NEXT b%
[94] 2620 READ chk$:chk=VAL("&"+chk$)
[FD] 2630 IF chk<>total THEN PRINT"Er
     ror in line";a%:END
[EF] 2640 NEXT a%:CALL &4000:RETURN
[6B] 2650 DATA 21,0a,40,01,0e,40,cd,d
     1,bc,c9,00,00,3dd
[31] 2660 DATA 00,00,16,40,c3,22,40,c
     3,4a,40,53,54,36f
[36] 2670 DATA 4f,52,c5,52,45,43,41,4
     c,cc,00,fe,01,498
[E2] 2680 DATA c0,21,46,c2,dd,56,01,d
     d,5e,00,06,20,47e
[C6] 2690 DATA 0e,40,c5,e5,7e,12,23,1
     3,10,fa,e1,01,4aa
[A1] 2700 DATA 00,08,09,30,04,01,50,c
     0,09,c1,0d,20,24d
[28] 2710 DATA e9,c9,fe,01,c0,dd,56,0
     1,dd,5e,00,21,601
[FE] 2720 DATA 46,c2,06,20,0e,40,c5,e
     5,1a,77,23,13,3ed
[C0] 2730 DATA 10,fa,e1,01,00,08,09,3
     0,04,01,50,c0,342
[AF] 2740 DATA 09,c1,0d,20,e9,c9,0a,0
     0,aa,20,1c,ff,498
[B1] 2750 DATA 1f,00,2d,00,14,00,0d,0
     a,00,70,61,70,1b8
[52] 2760 DATA 63,6f,ec,ef,0e,01,0d,1
     8,00,69,6e,6b,423
[E6] 2770 DATA 63,6f,ec,ef,19,1a,01,0
     d,22,00,6c,e6,462
[AA] 2780 DATA ef,19,0a,20,20,20,20,2
     0,20,20,00,37,229
[1B] 2790 DATA 00,1e,00,ad,20,0f,01,8
     2,20,0d,0a,00,1b4
[4F] 2800 DATA 70,61,70,63,6f,ec,01,a
     2,20,0e,2c,0d,409
[6F] 2810 DATA 0a,00,70,61,70,63,6f,e
     c,01,a2,20,0f,3db
[CF] 2820 DATA 2c,0d,18,00,69,6e,6b,6
     3,6f,ec,01,a2,3f4
[7D] 2830 DATA 20,10,2c,19,15,00,11,0
     0,22,01,a8,20,186
[09] 2840 DATA 22,21,52,45,4c,22,2c,1
     c,00,20,00,1f,1cf
[BC] 2850 DATA 00,2c,01,c5,20,54,68,6
     9,73,20,63,61,38e
[CB] 2860 DATA 6c,6c,20,6e,65,76,65,7
     2,20,72,65,74,483
[CF] 2870 DATA 75,72,6e,73,21,00,37,0
     0,36,01,83,20,2fa
[11] 2880 DATA 1c,00,20,2c,0d,00,00,6
     8,61,73,68,65,27e
[7B] 2890 DATA f3,2c,0d,00,00,74,6f,6
     f,6c,f3,2c,0d,416
[0B] 2900 DATA 18,00,69,6e,6b,63,6f,e
     c,2c,0d,0a,00,35b
[D5] 2910 DATA 70,61,70,63,6f,ec,2c,0
     d,22,00,6c,e6,4ac
[66] 2920 DATA 00,00,00,00,00,50,41,5
     0,43,4f,cc,04,243
[6F] 2930 DATA 00,00,00,00,00,00,00,4
     9,4e,4b,43,4f,174
[59] 2940 DATA cc,04,00,00,00,50,85,0
     0,00,4c,c6,04,2bb
[37] 2950 DATA 00,00,00,20,84,00,00,0
     0,00,00,00,00,0a4
```

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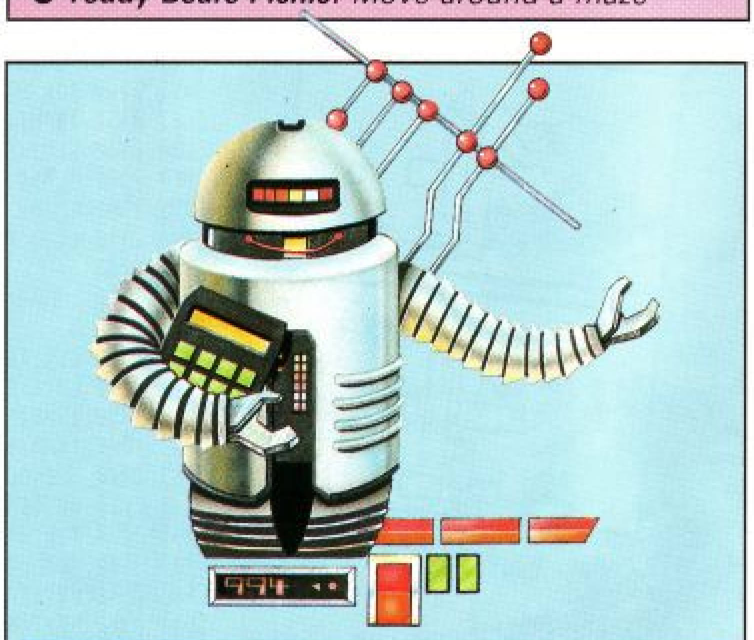
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PROGRAMMERS' SURGERY

Ian Sharpe gets to grips with your programming difficulties

WELCOME once again to the part of *ACU* that gives programmers a chance to polish up their coding techniques. Are you having problems using the second 64k in your 6128 for data storage? Simon Palmer from Scarborough is. He has explored the Bankmanager commands fully, but cannot get the required result.

At the moment Simon stores lines of data like this:

```
10 DATA 23,11,82,D,37,79,39,M,F,2,0,W
```

He then analyses them one line at a time with Basic commands like:

```
10 READ d$,m$,y$,s$,w$,yob$,a$,el$,er
   $,cll$,clr$,f$
20 IF yob$<a$ THEN GOSUB 100 ELSE 10
```

He knows now that the variables needn't all have a $ after them, but didn't at the time he wrote the program. Simon says he can rectify that once he has solved his main problem.

What he wants to do is use the first 64k for holding the Basic program and the second 64k to hold the lines of data. Each item in the line of data doesn't always have the same number of digits, for example *a$* may be 12 in one line and 345 in another.

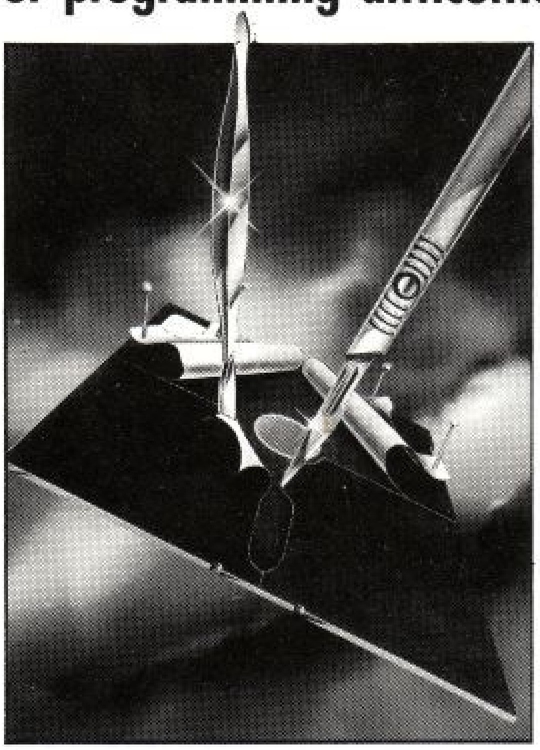
Simon's question is: *Can I use the second 64k for storing my lines of data? If so, how do I get the data into the other bank of ram and then access it one line at a time?*

Well, the Basic found on the 6128 is pretty much the same as that on the 464 with a few additions and enhancements. As the 464 doesn't have an extra 64k, the Basic interpreter isn't written to handle any more memory than the standard 40k or so. Therefore on a 6128 if you want to access the extra 64k you have to call upon a program which acts as a go-between one like Bankmanager.

The second 64k may be used in a variety of ways, offers a solution to Basic programs which have outgrown the main memory pool. The trouble is that if you don't want to use Bankmanager you need some other machine code programming to let you make best use of it.

If the way Simon presented his problem is the full story, Bankmanager can probably be used to solve it if he was to adapt his program to suit. Before going into detail though, this is a good excuse to look at the whole area of Basic programs that are too big to fit into 40k.

You can go through the program looking for shorter ways of achieving the same results, shortening variable names, cutting down on



REMs, using integer variables where possible and using multi-statement lines. There are lots more of these tricks of the trade, but they tend to make a program less readable and can only be taken so far.

One useful technique that can solve the problem at a stroke is known as overlaying. A properly structured program has clearly defined sections to do specific jobs.

You can imagine a menu on which are six items where the user has to press a number to indicate the one he wants. The routine that prints the menu and gets the user's selection will be a self-contained block. Each selection will have a corresponding block of its own, which should, as far as is possible, be independent of the others.

Now if the blocks are independent, only one can be in use at any one time, meanwhile the others are sitting around doing nothing except taking up memory. On a disc-based machine – tapes are too slow for this method – you can remove these blocks from the main program and store them on disc. They are all given line numbers which start at the same point, and when a block is needed you can merge it in to the main program before it is GOSUBed to.

Instead of subroutines, these program blocks can easily be data lines. Here is a short example of how this would work. Save the first two program segments as *overlay.1* and *overlay.2*, and then run the main program:

```
100 ' file overlay.1
110 DATA 1,2,3,4,5


100 ' file overlay.2
110 DATA 6,7,8,9,10

10 ' main program
20 CHAIN MERGE"overlay.1",30
30 GOSUB 70
40 CHAIN MERGE"overlay.2",50
50 GOSUB 70
60 END
70 ' read the data
80 FOR i=1 TO 5:READ j:PRINT j:NEXT
90 RETURN
```

So far so good, I hope. Although this is a powerful technique, it does have drawbacks. Firstly, if the merge operations are within a loop, Basic forgets where it is and will report an unexpected NEXT or WEND. You can use GOTO to get around that one.

The other snag is speed, or lack of it – the time taken to load a program segment may be unacceptable. There are programs around which allow the second 64k to be set up as a 64k disc drive. You would copy the overlays into it at the start of a session, and being ram instead of a physical disc drive with moving parts, merging would be a lot quicker.

Some file copying utilities will not work with a ram or silicon disc, so the way to accomplish the copy is to make sure the overlays are saved in Ascii format. That way you can copy the file using Basic like this:

```
10 OPENIN"A:overlay.1"
20 OPENOUT"C:overlay.1"
30 WHILE NOT EOF
40 LINE INPUT#9,a$
50 PRINT#9,a$
60 WEND
70 CLOSEIN
80 CLOSEOUT
```

where *overlay.1* is the filename of an overlay, and the second 64k has been set up as drive C.

Programs that allow you to set up a silicon disc

like this are the Dk'tronics silicon disc or Romantic Robot's Rodos rom, which will require a rom board. Or you may be lucky enough to come across a public domain program to do the job. There used to be one on Micronet as telesoftware.

The copying technique I've just illustrated leads to another possible solution to Simon's problem: Just save your data on disc in a file and read it in as needed. That way it isn't part of the program, so it takes up no room until you start putting it in variables.

Write a program, or use a word processor, to strip off the line numbers and DATAs. Assuming you have a series of such lines in a file called *datafile*, it can be read like this:

```
OPENIN"datafile"
WHILE NOT EOF
INPUT#9,d$,m$,y$,s$ etc...
IF yob$<a$ GOSUB 100
WEND
CLOSEIN
```

Alternatively set up some string arrays to hold the data and read it from disc into the arrays. Data held in this way takes up less room than when it is included in the program as data lines because there are no line numbers or DATA keywords.

Having covered those possibilities, we'll turn our attention to Bankmanager, which has the overwhelming advantages of being free, able to hold a lot of information, and, once primed with data, very quick. What you can't do is use it to store lines of Basic – you must use it in a similar way to *datafile*.

Commercial break

Are you baffled by your extra 64k? Would your manual make more sense if it was written in Sanskrit? Then buy the incredible *CPC Computing* back issue bundle and read Ian Sharpe's epic three-part series on Bankmanager. Only £9.95 on all good mail order forms.

Surgery Part II

The only problem I can see is that individual items of data aren't the same length on different lines, but if you're prepared to trade off a less than totally-efficient use of space in the second 64k for getting something working, this needn't be too much of a hindrance.

In essence, Bankmanager stores strings one after the other – like train carriages, where each seat is a character position. What you need to do is convert the information in your data lines into a form Bankmanager can handle. You can do this by adding all the items on a line together to make one string that can be broken down again when you want to process it.

The thing to do is look at each item of data and decide on the maximum number of characters it can occupy. Add these figures together to get a maximum length for the entire line ignoring commas, line number and the DATA keyword.

Each carriage is known as a record and, like a train, not all seats in a carriage need be filled. If the maximum length of the first item of data in a line is three characters, allocate the first three seats to it, even if in some cases only one or two seats will be filled. The second item will always start at position four, and will always occupy, say, the next two seats even if only one character is involved. Unfilled seats will be padded with spaces for convenience.

Taking two example lines, here's how they'd translate into strings suitable for storing with Bankmanager:

```
10 DATA 23,11,82,D,37,79,39,M,F,2,0,W
20 DATA 111,6,83,A,100,3,55,M,F,100,1
   0,WW

23 1182D37 7939MF2  0 W
1116 83A1003 55MF10010WW
```

Here I've assumed that the longer data items are the maximum length permissible. Notice how each line has become shorter? If there isn't much variation between the average length of a data item and its maximum size, even with spaces as padding you can cram more data into a given amount of ram.

You can see that although the items have been run together into something almost incomprehensible, each item has a known place in the string – what was *y$* always occupies positions six and seven, for example. What you need to know, therefore, is:

- How do you easily convert your existing data into this format and store it on disc?
- How do you load it from there into the extra ram?
- How do you get it out again and split it down into *d$*, *m$*, and so on?

As your data lines are quite long, from here on I'm going to use some hypothetical shorter data so the examples are less unwieldy:

```
1000 DATA Bill,2,3,4
1010 DATA Harold,122,100,40
```

There are four items on each line, and the maximum length of each is six, three, three and two, respectively. These will become:

```
Bill  2  3  4
Harold12210040
```

Assuming there are dozens of such lines and we don't want to do the conversion manually, we can write a short utility to do it:

```
100 ' create data file
105 '
110 FOR i=1 TO 4:READ length(i):linel
    ength=linelength+length(i):NEXT
120 DATA 6,3,3,2
130 OPENOUT"datafile"
140 FOR i=1 TO 2 'number of lines
150 dataline$=SPACE$(linelength)
160 position=1
170 FOR j=1 TO 4 'no of items on line
180 READ item$
190 MID$(dataline$,position)=item$
200 position=position+length(j)
210 NEXT
220 PRINT#9,dataline$
230 NEXT
240 CLOSEOUT
1000 DATA Bill,2,3,4
1010 DATA Harold,122,100,40
```

Reading the resulting file into the extra ram is a bit easier. Once you have Bankmanager installed, each line can be processed like this:

```
100 ' read data into second 64k
105 '
110 lines=0:linelength=14:errcode%=0
120 |BANKOPEN,linelength
130 OPENIN"datafile"
140 WHILE NOT EOF
150 INPUT#9,dataline$
160 |BANKWRITE,@errcode%,dataline$
170 lines=lines+1
180 WEND
190 CLOSEIN
```

The variable *lines* keeps a count of the number of data lines read in, so you know when to stop when reading them back out again. I haven't put in any error checking here, so I'd mug up on Bankmanager before using it in anger.

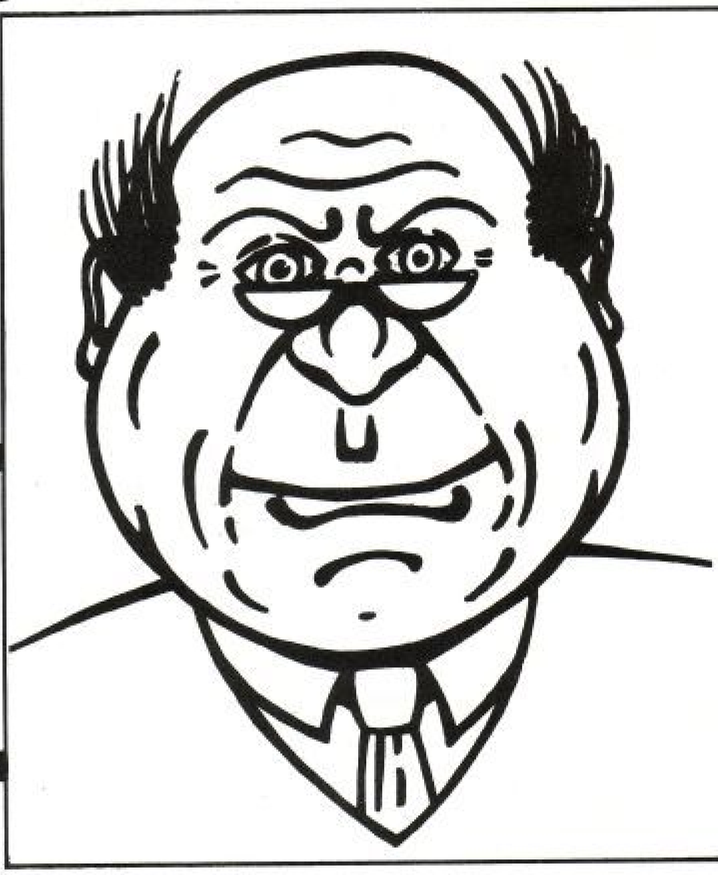
Finally, to read each item sequentially and break it down you need something along the lines of this:

```
200 FOR i=1 TO 4:READ length(i):linel
    ength=linelength+length(i):NEXT
210 DATA 6,3,3,2
220 FOR i=1 TO lines
230 |BANKREAD,@errcode%,dataline$,i-1
240 position=1
250 item1$=MID$(dataline$,position,le
    ngth(1)):PRINT item1$
260 position=position+length(1)
270 item2$=MID$(dataline$,position,le
    ngth(2)):PRINT item2$
280 position=position+length(2)
290 item3$=MID$(dataline$,position,le
    ngth(3)):PRINT item3$
300 position=position+length(3)
310 item4$=MID$(dataline$,position,le
    ngth(4)):PRINT item4$
320 NEXT
```

It would be a lot neater to make *item$* an array of four strings and use a loop to break *dataline$* down, but you get the idea. The *i-1* after the |BANKREAD command tells it which record you want – they're numbered from zero.

When a record has been read the next read or write operation automatically acts on the next record, making the *i-1* redundant for sequential access. However, if you add the last two programs together at the end of the disc reading operation Bankmanager will be pointing at the end of the file, so for the first read the pointer must be restored to zero. You can accomplish the same thing with another |BANKOPEN, *linelength* before reading commences.

Applications advice



ACU agony uncle David Foster sorts through a mixed bag of your questions

FOLLOWING Bob Hobday's request in the December issue for information about how to print the pound sign on his Quendata printer, I have been sent a couple of letters to tell me that there is a suitable daisy-wheel, a Qume compatible one, called Uk Ascii, which has a part number of 82286. Others are available under the name of England Series.

There is, however, a slight disadvantage in that the pound sign replaces the hash sign. So the hash is printed as a pound, which makes Basic listings look a bit strange.

The reason for this switch around is that the CPC has a 7 bit printer port, with the result that when the Ascii code for the pound – 163 – is sent to the port, the eighth bit, with a value of 128, is stripped off, so the printer receives the code 35 (163 – 128 = 35), which would normally be the hash symbol, but in the case of English daisy-wheels is a pound.

Now we know why Amstrad chose to allocate an Ascii value of 163 to the pound and only provide a 7 bit printer port.

Skywave RS232 interface

Derek Pinches from Surrey uses his modem for communicating with Telecom Gold. He has it interfaced to his CPC with one of the old and long out of production Skywave Multiport interfaces. Derek was told that the interface is a full specification RS232 unit, but now finds that when he tries to run the CP/M Mex communications program it will not even recognise that a serial port is connected.

Well the Skywave *is* a full RS232 interface; the problem is that the addresses it uses are not the same as those used by CP/M, which is why CP/M does not recognise it. As the interface was originally supplied with its own comms software – written in Forth, incidentally – this was no problem.

In theory it ought to be possible to patch CP/M so that it will communicate with the Skywave interface, but I have been unable to find out any information about the addresses it uses. The manufacturer is no longer available to provide support.

I fear that if Derek wants to use CP/M-based comms software he will find it easier and certainly a lot quicker to buy another interface that *does* work with CP/M. The Pace/Amstrad interface, the original Amstrad interface and the old HoneySoft interface are all directly compatible with CP/M without modification.

More on Cash Trader

Greg Egan from Stalybridge has written in reply to my request for anyone else who has been having trouble with Cash Trader. While Greg finds the program to be impressive, he has also experienced similar problems to Brian McIntosh and has received the same response from IT Marketing. He is no nearer to a solution, other than the fact that Cash Trader appears to work correctly as long as only a couple of entries are made.

Greg's current solution to the crashing problem is to switch off and re-load the program before continuing.

Foreign accents with Protext

Alan Lea of Leamington Spa uses Protext, or to be precise, his wife does. She uses it to type Spanish and Portuguese and is short of an acute accent. Between them the Leas have managed to nearly produce the correct accents by re-defining a control code to "backspace" and then printing an apostrophe on top of the previous character. But the end result is only partially successful. Alan wants to know how else he can do it, and also how the character can be displayed on screen.

Unfortunately he does not say what make of printer he has, but most machines allow you to redefine characters – this subject was fairly well covered in our July 1988 issue. Once the characters have been designed, they can easily be loaded into the printer from within a Protext document by making use of the *>oc* stored command to output codes.

The best arrangement is to save a special template containing all the required sequences of commands.

Screen characters can be redefined in the

Protext loader program by making use of the *SYMBOL AFTER* and *SYMBOL* commands. It is also possible to redefine what keys serve what purpose from within the loader program by making use of the *KEY DEF* command.

A good read of these commands in the CPC manual and a bit of experimentation should make things obvious. If a variety of different configurations are needed, a simple Basic menu can be created to select which definitions are needed before finally loading Protext.

Juki6100 problems and Protext

John Gratton from Liverpool has a Juki6100 printer and uses it with his 6128 and Protext. He has been unable to get it to print anything so far, and wants to know whether this is a common problem.

No, it isn't a common problem. I used my 6128 with a Juki6100 printer and Protext for a long time with no problems at all. I also know several other people with the same arrangement.

John does not say whether trouble only arises when he is using Protext, or whether the printer refuses to print at all when connected to the 6128. The simple way to check whether the printer works is to load a Basic program and type *LIST#8*. Alternatively, typing *PRINT#8,"Hello World"* should have the expected result. If not, the fault is with the printer, the cable connecting it, or, less probably, the printer port on the 6128.

If the printer works from Basic but not from within Protext, the problem can only be one of something being set up incorrectly within Protext.

John does not say which version of Protext he is using, but from his letter I get the impression that he is using the CP/M Plus version. If so, then configuration for a specific printer requires several changes.

- The Set Printer Driver option in CONFIG should be configured so that the 6128 option contains the required driver name.
- The JUKI6100.PTR driver should be loaded into SETPRINT and the printer type must be set to parallel in the Set Printer Options, if it isn't already.
- The control code interpretation setting in SETPRINT's Set Printer Options should be set to send.
- The save option in SETPRINT should be used to save the modified driver.
- It is important to copy the modified PROTEXT.CFG and JUKI6100.PTR drivers on to the disc from which Protext is loaded. Generally the CONFIG and SETPRINT programs will be on the reverse side, or a separate disc.

When Protext is next loaded the status line should show that the JUKI6100 driver is loaded and also that the port is PAR. If not, something has still not been configured correctly and a further check should be made. Typing *LCFG JUKI6100* should result in the above messages being displayed. After that, all should work correctly.

Digitised pictures

Andrew Rush from Rochdale has recently bought Stop Press and wants to make his own digitised pictures for use with it. He already has a video recorder and wants to know what else he needs in the way of hardware and software.

The only other he needs is a video digitiser. One that I know works well is Vidi from Rombo Productions (0506 39046). It retails at £89.95, but



Joy Sharp of Rombo Productions, captured by the Vidi video digitiser

I've seen it advertised by Wacci (01-898 7322) for as little as £68.

All the software needed to capture images is provided – it is only necessary to connect the video recorder to the digitiser box and run the software. Alternatively, images can be captured directly from a video camera connected to the digitiser.

Supercalc II

Charlie Jones from Carlisle uses CP/M on his 6128 and also has a 256k ram pack. He wants to know why he is still limited to Supercalc II spreadsheet files of only about 35k when all that memory should be available.

The reason for this is that the Z80 processor is only capable of addressing a maximum of 64k of memory without trickery like switching banks of memory in and out. CP/M Plus is only capable of using about 61k. By the time Supercalc II has loaded, all that is left is about 35k. There is nothing that can be done to access the remaining memory.

For most programs the addition of the 256k ram expansion is a waste of time because virtually all CPC programs are written, at best, to make use of the standard 128k memory available on the 6128. Many do not make use of anything except the first 64k. If you want to make use of the extra memory, you will have to write your own programs to do so.

Upgrading

I have had several requests from people for advice about upgrading their computer. Some have been from people considering a computer for the first time, while others are CPC owners who are wondering whether they should upgrade to one of the newer 16 bit machines.

I always find it very hard to advise new buyers for the reason that often they have no real idea of what they want the computer for. Usually it is for the kids to use as well as for them to do a bit of word processing or process small business accounts.

In most cases I recommend the CPC because it is one of the few computers capable of running business applications – and well established ones at that – as well as having a wide range of games software and a small, but passable, range of educational software. More importantly, most of the software is available at very reasonable prices.

My answer to people looking at the 16 bit machines is to ask them whether they cannot do what they want with their CPC. If they can't, often because the volume of data is so large that it cannot be handled without a hard disc, there is little alternative.

On the other hand, if they just want a change, then so be it. But it is worth bearing in mind that the cost of buying an Amiga is only a part of the story. Work out what it will cost to replace all your existing software with the more expensive 16 bit programs before making a final decision.

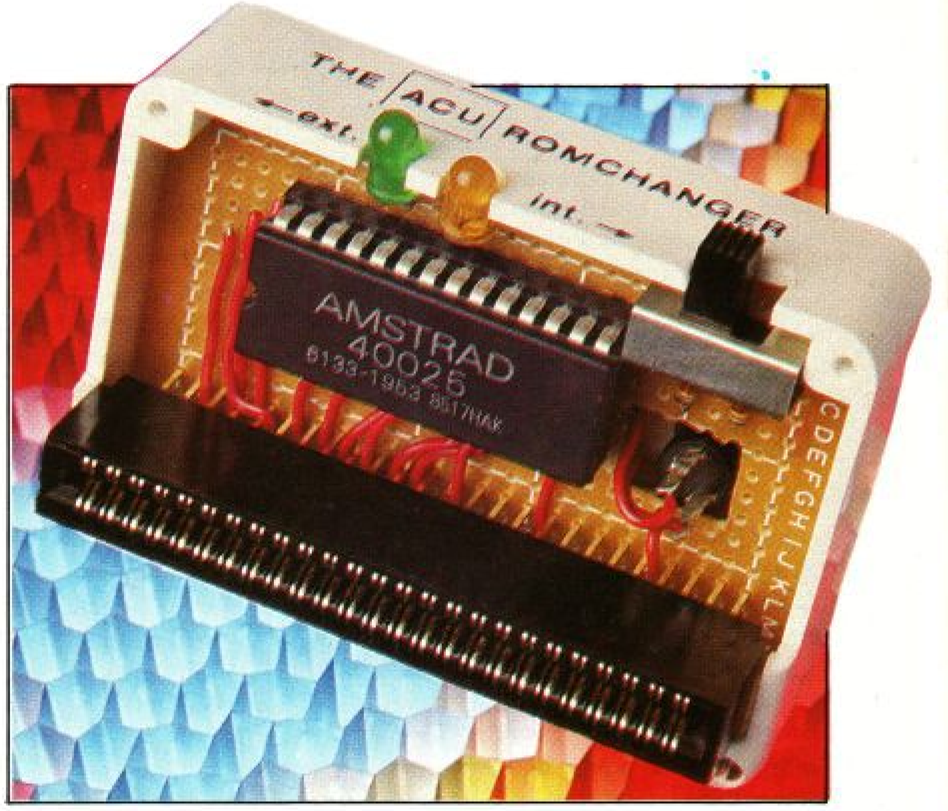
For anyone using their computer for work, there are also the considerations of how much time it will take to learn these new programs and the difficulty of transferring data from one machine and program to another.

Applications Advice is a regular monthly column which answers queries and problems connected with the use of serious applications software and hardware.

When writing, please give full details of the model of CPC and any accessories connected to it, the version number of the program that is causing the problem, and a full description of what is happening. Scribbled notes along the lines of "...and my computer won't print anything..." make it a difficult to give a sensible answer.

Please *do not* enclose a stamped addressed envelope – David Foster can only answer letters via this column. Write to David at: **Applications Advice, Amstrad Computer User, Focus Magazines, Greencoat House, Francis Street, London SW1P 1BG.**





Back to the hard stuff

Phil Craven shows you how to have two computers available at the flick of a switch

I AM often asked if it is possible to convert a CPC into a different model, complete with the new model's system rom. The answer is yes. To turn a 464 into a 6128, for instance, you will need an extra 64k of memory, a DDI-1 disc drive with interface and a 6128 chip.

The first two items in that list are easy. The memory expansion is sold by Ram Electronics (0252 850085), the DDI-1 by the User Club (091-510 8787). Yer buys 'em and yer plugs 'em in.

The 6128 rom, on the other hand, presents a problem. Some machines were made with the system rom fitted in a socket on the main board, in which case it is a simple matter to pull it out and change it for the 6128 version. But most were made with the chip soldered to the board. To change these would need track cutting and soldering, or the original rom de-soldered and replaced. Not a job for the squeamish.

To overcome this problem, I have come up with the ACU Romchanger widget which will allow you to fit the 6128 rom to your 464 or 664, or vice versa, without ever having to open your computer. You'll be able to switch between the two systems at will, and yellow and green LED indicators will keep you informed as to which system is operative.

How it works

If switched-in on power up, the circuit will not allow the internal system rom to be enabled, electrically replacing it with the external system rom. It all fits neatly into a small box which pushes on to the 50-way edge connector, giving easy access to the switch and reset button.

Reset button? Yup. While I was about it I decided to include a button, the pressing of which will give an early morning start (EMS) type reset. It is useful for those occasions when the Ctrl/Shift/Esc method doesn't work. The reset button will do the job without the need to power down. The whole thing is rounded off with a through connector for adding the disc drive and other peripherals.

The CPC provides us with a line on the 50-way expansion connector, called ROMDIS with which we can disable the internal system rom. With the switch SW1 in the down position – see the circuit diagram in Figure I – ROMDIS is sent to a logical high and the internal rom is completely disabled.

The external rom, being wired up exactly as the internal one, now becomes the operating system in use. With SW1 in the up position the opposite happens. The high disabling line is fed to the external rom and the internal system is allowed to operate. It's as simple as that.

There is one small thing that we have to allow for, the fact that we are not the only ones who might want to disable the system rom. Other roms send ROMDIS high when they are active – we must ensure our external rom intercepts this signal and is disabled when it happens. This we do by redirecting the through connector's ROMDIS line through our circuit before going into the computer. Both system roms then receive the signal and whichever one is active at the time will be disabled.

Diodes D1 and D2 are there to prevent the high line from 5v getting out to other peripherals. D3 and D4 are green and yellow LEDs to indicate which system rom is in use. The arrowheads on the left of the circuit diagram represent the computer's expansion socket connections; those on the right represent the through connector's.

All 50 expansion socket lines are automatically connected for peripheral use when the through connector is fitted, but only those which are used in the circuit are shown. The lines to the left of the rom with the numbers 8 and 15 next to them represent the eight data lines and the 15 lines of the address bus. This is the standard way of showing multiple lines in circuit diagrams. SW2 is a push button which resets the computer by grounding the RESET line.

Construction

Before we start let me point out that dotted lines in the wiring diagram are connections on the underside of the board, and solid lines are topside connections.

The first job is to make the board fit inside the box by cutting away all four corners and sanding enough from the two edges opposite the numbers and letters to allow the board to rest comfortably on the two central protrusions inside the box. Next cut out the square hole in the board, as indicated in Figure II, so that SW2 can poke through it.

Now all the components except SW2 can be fitted to the top, non-coppered side of the board. Figure II shows the precise locations for each. Do not do any wiring at this stage.

First solder all legs of the 28-pin socket to the board. It should have an equivalent indicator to the half moon shape shown in Figure II, which should be positioned as indicated. If it has a centre cross member, then solder the resistor and capacitor, any way round, flat to the underside of the board. Otherwise they will fit nicely inside the socket on the top side. Use their long legs to connect them to the socket's pins, indicated by the dotted lines.

Fit SW1, which will need its corner legs broken off by repeatedly bending them with pliers so that it will fit flush against the board. Figure II shows a large and a small shape inside each of the D3 and D4 LEDs – you can see these kind of shapes in the LEDs themselves. The larger area in each LED needs to be on the left, as drawn.

Slowly bend each LED's legs at right angles using pliers, just below the fat part, so that they will locate in their correct holes and poke through the top of the box. Solder them so that they stand vertically and their fronts are in line with the front of SW1.

When they are soldered in, bend the left leg of

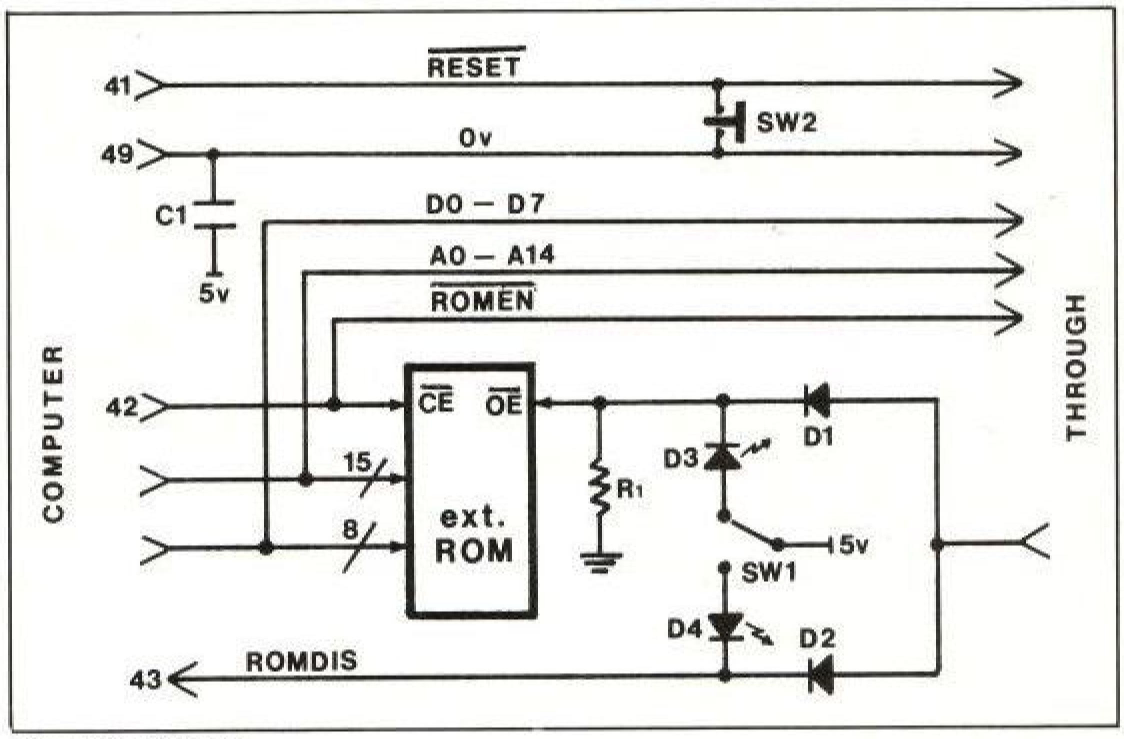


Figure I: Circuit diagram

D3 and solder it to pin 22 on the rom socket. The other three legs can be cut or broken off.

Diodes D1 and D2 must be soldered the correct way round. One end of each is marked with a heavy black or coloured band. The equivalent band is shown in Figure II. When soldered, the bottom ends can be bent over and joined together; the top ends can be broken or cut off.

The last two components to fit are the edge and through connectors. The edge connector is the part which connects to the computer. It is important to fit it so that its main body is 8mm to 9mm from the board else it will not connect properly to the computer. When all 50 legs are soldered they must be connected to the through connector, but first cut off leg 43 – ROMDIS – from the underside of the board. It must be soldered to the board, but not carried through.

Finally the through connector can be soldered to the edge connector, as in Figure IV. Pre-bend the legs and allow plenty of solder to run between the connectors. I find that using a vice is a good method of neatly bending all the legs in one go.

All that's left now is to doctor the box and wire everything up. You can see that the box needs a slot in the back for the through connector, a wide slot in the front for the edge connector, some slots or holes in the top for SW1 and the LEDs, and a hole in the back for the reset button, SW2.

The slot in the back, about 8mm from the bottom of the outside and 6mm wide, is the first one to do. The method I used was to drill a 6mm hole about 11.5mm up, somewhere near the middle. From that I cut the slot with a junior hacksaw blade.

The assembly will now fit into the box as far as the LEDs and SW1. Mark and cut out recesses for these, but only as deep as the parts themselves – about 5mm. You could even drill 5mm holes for the LEDs to make them a bit tidier.

While we are working on the main box unit, convert the screw hole at the back, the one behind the square hole on the board, into a larger hole – about 7mm diameter – ready for SW2.

Since the edge connector is as wide as the box, the box lid can be modified in one of four ways. The easiest is to cut the bottom off and leave it off. Next easiest is to cut it into two pieces, leaving a gap for the connector, and screw them both on. The third is to cut the top to fit and cut a recess out of the bottom so that the bottom part has a thin strip up each side of the edge connector. This was the method I chose.

The last and best way is to keep it in one piece by cutting a wide slot in the same way as was done for the through connector. This is the only way that all four corner fixing screws will work efficiently. The top edge of the slot should be 34mm from the top of the box, and the bottom

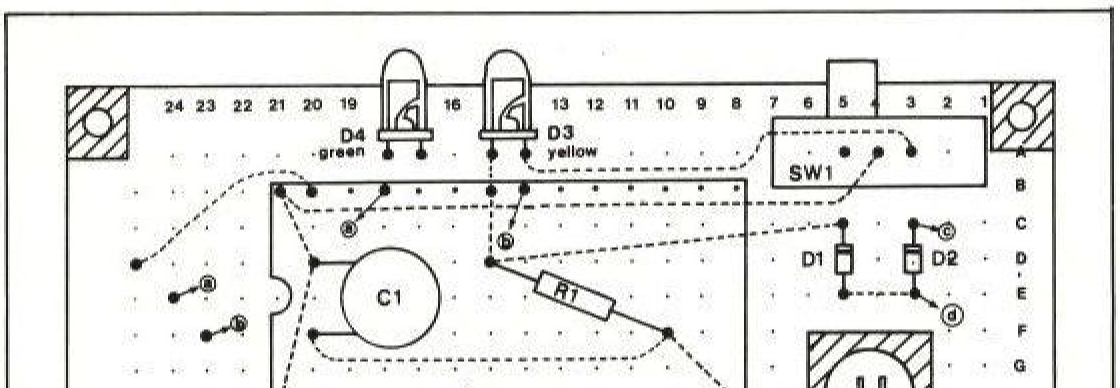


Figure II: Layout and part one of the wiring diagram

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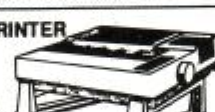
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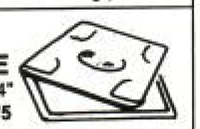
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edge 10mm below that.

To finish the box with some style I have included a small sheet of transfer lettering in the parts list for personal embellishments.

There's just the wiring left to do now. All the connections are shown in Figures II and III. Allow a little slack in each wire so that it can be moved aside if needed, but not too much so that it won't fit in the box.

Both wiring diagrams show the top, uncoppered side of the board. Dotted lines mean that the wire is underneath, solid lines mean that it is on top. To avoid confusing diagrams I have shown some connections by arrows (which don't necessarily point in the correct direction) and some letters inside circles. Identical letters connect together – **a** connects to **a**, **b** connects to **b**, and so on.

Pin 43 in Figure II – ROMDIS – has two connecting points, the edge or computer connector, soldered to the board, and the through connector. They are marked **C** and **T** for Computer and Through. The **T** connection must be soldered straight on to the through connector. Don't mix them up or it won't work.

Many of the wires pass under the edge connector and on top of the board; these will be obvious as you come to them. SW2 can be fitted to the box at this point, but allow several inches of wire so that the board can be taken out without needing to unscrew the switch.

When that's all done, gently press the wire against the back of the board, fit the assembly into the box and screw the whole thing together. Don't put a rom in just yet. With the power off, plug the unit into the computer's expansion port, which is marked Floppy Disc on the 464, set the switch on the Romchanger to the right (yellow) and power up. If all is well the computer should behave as normal. Press the reset button and your computer should reset.

Now power down, set the switch to the left (green) and power up again. The computer should hang up. We have disabled the internal rom and replaced it with nothing.

Now you can power down, fit the 464 or 6128 rom, making sure that the half moon indicator is positioned as shown in Figure II, and test everything again. This time when the green light is on you will see a different Basic version number on the screen and you have your alternative system in operation.

If things don't work as described, make the following checks. Are the diodes and LEDs the right way round? Is the rom the right way round? Check that all the connections are made and to the right places.

Go over the diagrams with a coloured pen when each connection is checked to make sure you've done them all. Are all the components in their correct positions as shown in the diagrams? Check that no shorts exist between close joints. If all these check out and it still doesn't work, ask a friend to check it out for you.

The unit must be the first peripheral to be attached to the 50-way edge connector – labelled Floppy Disc on the 464 and Expansion on the 664/6128 – so that the external rom can intercept all ROMDIS operations as described earlier.

Because the board is not fixed solidly inside the box, use the through connector to push it on to and pull it from the computer. Avoid squeezing the wiring when inserting a rom.

The unit has been used successfully on both a

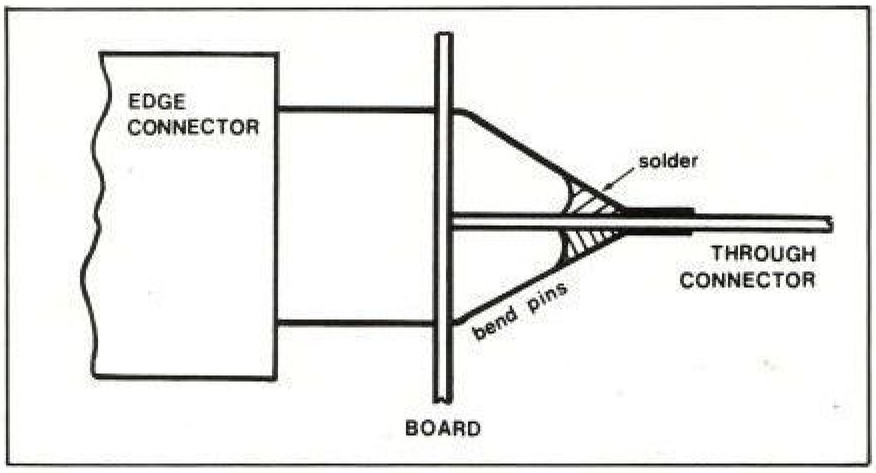


Figure IV: How to solder the edge connector to the through connector

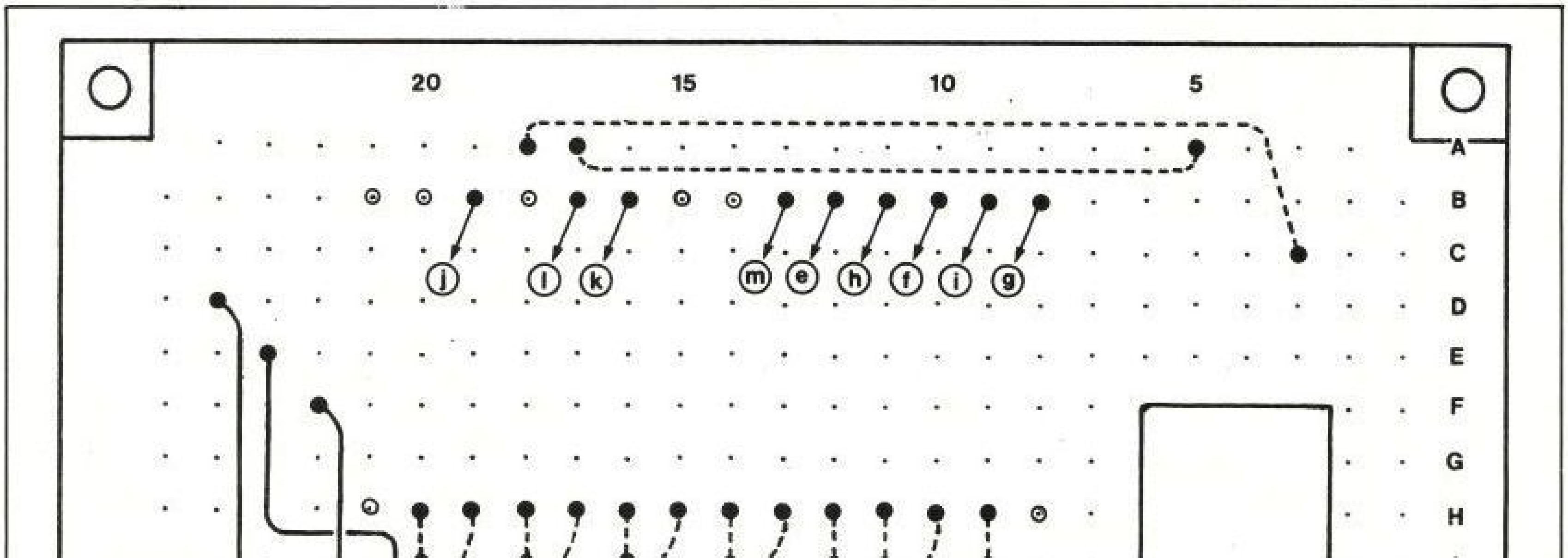


Figure III: Part two of the wiring diagram

464 with a 6128 rom in it, and a 6128 with a 464 rom in it, but I should point out that because 6128s and 664s have their disc roms fitted internally, they produce the ROMDIS signal internally. This means that the external rom cannot intercept the signal and cannot be disabled for the disc rom to be initialised. The 464 disc is external and will work perfectly.

The two system roms contain different programs, so switching between them while the computer is switched on will put you into a different program, causing a crash. Either power down before switching or use the reset button after switching.

For those who haven't yet phoned, written or read last month's letters pages, the six ceramic capacitors on the December issue DIY rom board – which are in the circuit to absorb any voltage spikes – should be connected between 5v (pin 28) and ground (pin 14) of the six rom sockets. They can be connected any way round, one capacitor to each socket.

Many thanks to everyone who has phoned or written to say, "The romboard works!" We know it works, but it helps us to know that you've successfully completed the project.

Good luck with the ACU Romchanger. What shall we build next? Hmmm?

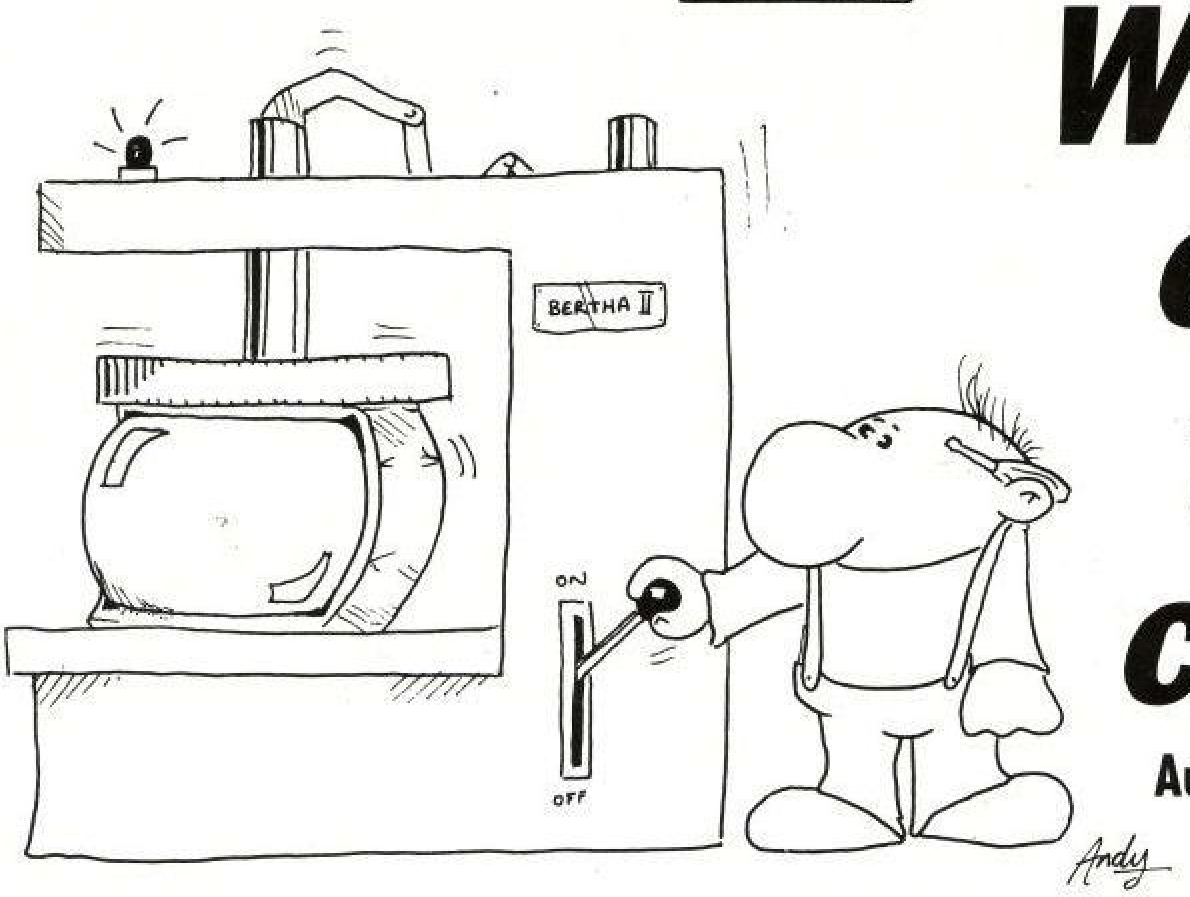
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1	Sheet of transfer letters 2.5mm	Maplin	XH73	0.48	0.48
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- Tandy – see local Yellow Pages under "Electrical Supplies Retailers".

ACU Romcharger – parts, suppliers and prices

Soldering tips

- Since the pins are only a tenth of an inch apart you will need a small soldering iron. Any Tandy store will have one in stock for a few pounds, along with solder.
- To make perfectly soldered joints, the end of the wire should be tinned (coated with solder). To do this, strip about 1.5mm of insulator from the end of the wire with a sharp knife, hold the stripped end on the tip of the soldering iron, place the solder on to it and allow it to run over the wire.
- To connect it to a pin, charge the tip of the iron with a small amount of solder, place the iron against the pin and then place the tinned wire against the pin. The solder will run together and a perfect joint will result.



When it comes to the crunch

Auntie John has designs on data compression

FOR some reason the display of a computer, or more accurately the screen memory, always gets more attention from machine code programmers than any other area. Far be it for me to fly in the face of public opinion. This month we are going to look at a routine that will compress screens.

What this means is that the 16k normally needed for storing the pixels is going to be reduced, on average, to about 9k, allowing screen designs to take up less space on disc and tape, and so speeding loading and saving.

The amount of memory saved depends a great deal on the content of the design. This will become apparent when I explain the compression technique to be used.

Due to the Bermuda Twilight Triangle Zone, which as you know is centred over the tiny village of Brentwood in Amstradshire, this issue of ACU is dated March, although it is barely February as you are reading and, as I write, Scott and Charlene aren't even engaged yet.

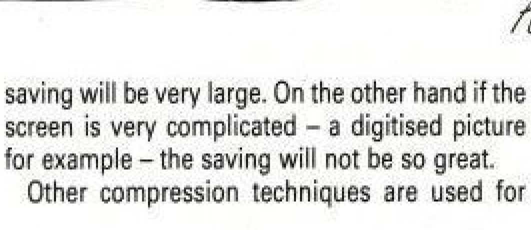
An imaginative explanation for this time difference was once put forward by Lance Davis, our letters editor, who suggested that by dating the magazine in this way we could all get a month off for holidays in July or June. Or was it May?

Anyway, as with everything else you read in *ACU*, this should be taken not only with a pinch of salt, but with a dash of pepper, a dollop of brown sauce and perhaps a little tomato ketchup or Soy sauce as well. But I digress – I only wanted to warn you that St. Valentine's Day is coming up soon. I want lots of cards, preferably from the female readership.

Back to data compression. The technique we are going to use is called *run-length* coding. Instead of storing each byte of the display, we store the value of the byte and how often it occurs. For example, if the first line of the screen contained 10 bytes of value 255, 40 bytes of value 100 and 30 bytes of value 42 we would store the bytes as shown in Figure I.

You can see that if the screen contains simple blocks of colour with little variation, the memory saving will be very large. On the other hand if the screen is very complicated – a digitised picture for example – the saving will not be so great.

Other compression techniques are used for



A hypothetical line of data or a line of hypothetical data

these more complicated pictures, and perhaps we'll look at some in a later life.

Thus we have two programs to write: One to compress our screen design, another to decompress and redisplay it. Such routines running in Basic could take several minutes; in Z80 machine code, however, the timing is a matter of seconds.

Simply red

Isn't it typical. No sooner have I poked fun at Chris the Hippie for having a Spectrum than he goes out and buys an Atari 520ST. It appears that all the trendy new computers are that funny off-white colour. You know, white with a hint of cooking chocolate. Therefore to obtain maximum street credibility with your trusty gun-metal CPC, I recommend removing the outer casing and spraying it with white car paint. Remember to wave bye-bye to your warranty as you turn the screws.

If you want to be even trendier, you can use a different colour. I predict that bright red micros are just around the corner. Why not be the first on the block with a pillar-box CPC?

For the more fashion conscious, stylish sticky-backed plastic is available in an assortment of colours. Care should be taken when applying it – one key looks very like another when coated in a layer of bright green plastic. And although such an arrangement will liven up your letters, your machine code programs will suffer.

The individual style of the programmer is also considered very important in some circles: Hawaiian beach shorts are out, but dark glasses and peaked caps are very popular. If the glasses are very dark, difficulty will be experienced in reading the screen and will give the same results as the sticky-backed plastic.

Anyway, Listing I is an assembly language program suitable for producing run-length data. It makes several assumptions. The first is that the screen memory starts at hex address &C000, meaning that the screen has not been scrolled. The second assumption is that the compressed screen data is to be placed at address &4000 onwards. For this reason, always set HIMEM to below &4000 before calling the routine – *MEMORY &3FFF* will do the trick.

The length of the compression data is stored at hex addresses &8060 and &8061. After the routine has been called, the length can be calculated as follows:

```
210 lngth=PEEK(&8060)+PEEK(&8061)*256
```

The *compression ratio* – a measure of how successful the compression was – can be found with two lines of Basic. The value 16384 is how many bytes a non-compressed screen takes up:

```
220 ratio=100-(length/16384)*100
230 PRINT "Compression:";ratio;"%"
```

A ratio of less than 20 per cent means that your screen display is just too darn complicated and it is probably not worth your while compressing it. If the ratio is greater than 20 per cent the data is

worth saving. The following line will achieve this:

```
SAVE "squashed",b,&4000,length
```

Of course, having all this wonderful data saved to disc or tape is quite useless without a routine to reverse the compression. Listing II takes data starting at hex address &4000 and reconstitutes the picture. If the data is not at &4000 some very pretty and very useless screen designs will result.

Compile time

As a very special Easter gift to those of you *still* without assemblers – and this is not as may be suggested simply a way of padding out my article to get more money to pay off my student overdraft – I am including Listing III, a Basic hex loader.

How's the juggling coming along? I hope you've been practising and can now keep the balls up in the air for at least 15 minutes. If so, you are ready to make your first social debut – overnight you can become the most popular person in the neighbourhood.

Pick a good night. If you intend to be outside, make sure it is not too windy; if you are indoors, make sure the ceiling is high enough. The best way to start is to act naturally. Casually reach into your pocket during a conversation and produce your three objects. Then, still talking as though nothing untoward is going to happen, begin your act.

If all goes well, you can finish your short display, place the objects back in your pocket and make your farewells. The look of open-mouthed awe on the faces of those around you will be amazing.

Warning: If you should happen to drop an object or, worse still, throw it somewhere by mistake, on no account attempt to retrieve it. Believe me, it's safer where it is. Simply place the remaining objects in your pocket, glance at your watch and say, "Gosh, look at the time – I'm late for my therapy".

Ahem. So what use can be made of the routines we've discussed? Well, if you are writing your own art package and want to cut the time the user will spend saving and loading pictures – compression is one solution. If you are writing a graphics adventure program and want to store as many pictures in ram or on disc as possible – again, compression will be quite useful.

The compression routines will even work on data other than screen designs – any section of computer memory can be squeezed in the same way. It depends on the complexity of the data how successful the compression will be.

See you next time, and remember, if you teach the cat to ride a motorbike you must be prepared for some very scared looking mice around the house.

```
        org &8000       ;Suggested start of code.

        ld hl,&c000     ;Start of screen memory.
        ld de,&4000     ;Where data is to be stored.
        ld a,(hl)       ;Get first value.
loop1   ld (de),a       ;Store value.
        inc de
        ld b,a          ;B = current value and
        ld c,1          ;C = occurrence (or length).
loop2   inc hl
        ld a,h
        or l
        cp 0
        jp z,exit       ;Check for end of screen.
        ld a,(hl)
        cp b            ;Is value the same as last time?
        jp nz,quit      ;If not the same type, goto "quit"
        inc c           ;otherwise, length=length+1.
        ld a,c
        cp 1
        jp nz,loop2     ;If length<=256 then continue.

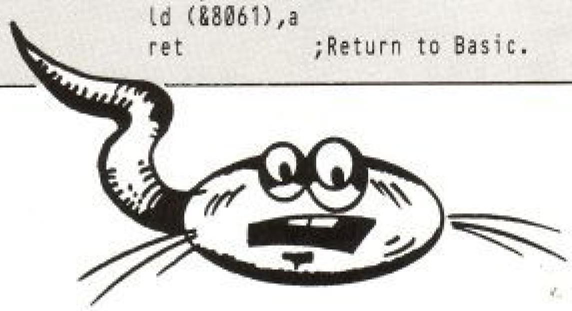
        ld a,0          ;C is now 257,
        ld (de),a       ;so store 256 as length
        inc de          ;and continue as though
        ld b,a          ;a new value has been found.
        jp loop1        ;NB 0 = 256 mod 255

quit    ld b,a          ;Remember new value.
        ld a,c          ;Store length.
        ld (de),a
        inc de
        ld a,b          ;Recall new value and
        jp loop1        ;go back to finding length.

exit    ld a,c
        ld (de),a       ;Store very last length.

        ex de,hl        ;Now calculate total length
        ld bc,&4000     ;of data by subtracting &4000
        scf             ;from last storage address,
        ccf             ;and store in address &8060
        sbc hl,bc       ;and &8061.
        ld a,l
        ld (&8060),a
        ld a,h
        ld (&8061),a
        ret             ;Return to Basic.
```

Listing I: The compression routine



```
        org &8045       ;Suggested start of code.

        ld hl,&4000     ;Start of data.
        ld de,&c000     ;Start of screen memory.

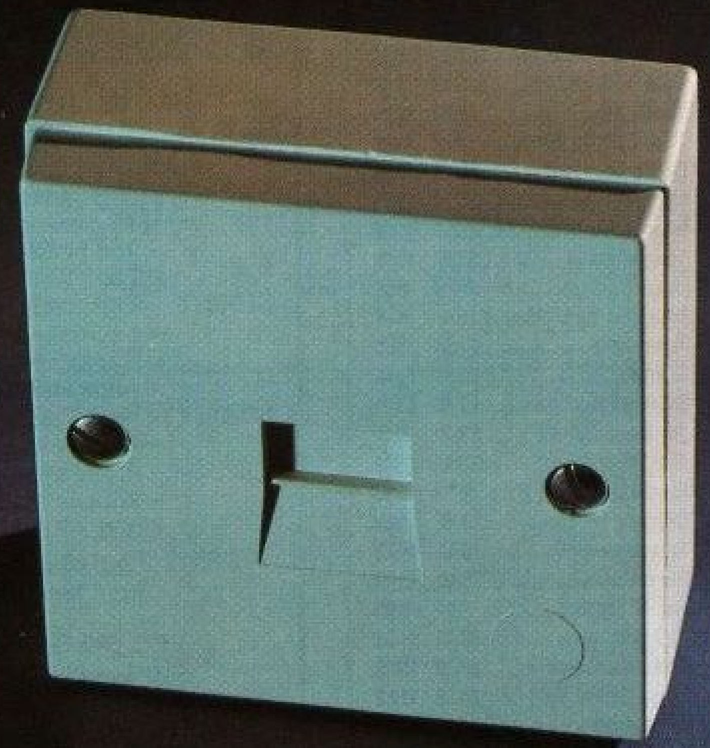
loop3   ld a,(hl)       ;Get value
        inc hl          ;and
        ld c,a          ;place in C.
        ld a,(hl)       ;Get number of times it occurs
        inc hl          ;and
        ld b,a          ;put it in B.
loop4   ld a,c
        ld (de),a       ;Poke value to screen.
        inc de
        ld a,d          ;Check to see if the end
        or e            ;of the screen has been
        cp 0            ;reached.
        ret z           ;Yes it has, return to Basic.
        djnz loop4      ;No it hasn't, continue.

        jp loop3        ;That's the end of that
                        ;value, let's try another.
        end
```

Listing II: Decompressing a screen

```
10 ' Screen compress.
20 ' Basic loader and demo.
30 '
40 MEMORY &3FFF
50 FOR a=&8000 TO &805D
60 READ a$:b=VAL("&"+a$)
70 POKE a,b
80 NEXT
90 MODE 1
100 FOR t=1 TO 50
110 x=INT(RND*600)
120 y=INT(RND*360)
130 i=INT(RND*4)
140 ORIGIN 0,0,x,x+40,y,y+40:CLG i
150 NEXT
160 CALL &8000
170 CLS:PRINT "Screen compressed."
180 PRINT:PRINT "Press spacebar."
190 WHILE INKEY(47):WEND
200 CALL &8045
210 lngth=PEEK(&8060)+PEEK(&8061)*256
220 ratio=100-(length/16384)*100
230 PRINT "Compression:";ratio;"%"
240 DATA 21,00,c0,11,00,40,7e,12,13
250 DATA 47,0e,01,23,7c,b5,fe,00,ca
260 DATA 30,80,7e,b8,c2,28,80,0c,79
270 DATA fe,01,c2,0c,80,3e,00,12,13
280 DATA 47,c3,07,80,47,79,12,13,78
290 DATA c3,07,80,79,12,eb,01,00,40
300 DATA 37,3f,ed,42,7d,32,60,80,7c
310 DATA 32,61,80,c9,20,20,21,00,40
320 DATA 11,00,c0,7e,23,4f,7e,23,47
330 DATA 79,12,13,7a,b3,fe,00,c8,10
340 DATA f6,c3,4b,80
```

Listing III: For poor people



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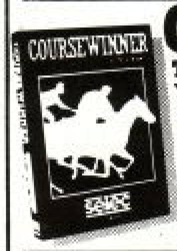
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There and back again

Alex Aird gets you kitted up for the marathon task of doing what they say is impossible



SO you want to know how to load and run a Basic program from machine code, do you? Easy. All you have to do is load the Basic program to address &170, enable the Basic rom, jump to the correct address in the rom and that should be that. Shouldn't it?

The jump address on the 464 is &E9BD. On the 664 it's &EA7D and on the 6128 you jump to &EA78. I found these execution addresses in Glentop's Amstrad Advanced Users Guide.

OK. Type a short line of Basic, 10 PRINT"hello", and then type in as a direct command CALL &*xxxx*, where *xxxx* is the jump address for your machine. Crashes, doesn't it. Silly us. We forgot to enable the Basic Rom.

As I have Maxam 1.5 plugged into the back of my CPC, I made use of an Arnor bug – a call to any address above &C000 from within Maxam will always jump to a rom, which means you can't list or disassemble screen memory using Maxam. At least I used to think of this as a bug, but we can turn it into a feature.

If you have Maxam 1.5, retype the example Basic line and then type ı J,&EA78. This time it works. Problem solved? Not quite. The brief was to load and run a Basic program from machine code, so I saved the line 10 PRINT "hello" as a program called XXX and wrote the machine code program in Listing I.

First steps

After assembling the code, reset the machine with Ctrl-Shift-Esc – the code at &BE80 will survive this reset – then type CALL &BE80. This works, but it is only a little program. The next thing is to try it out with a longer Basic one.

I renamed a 26k Basic program to XXX and tried the program again. It stopped with the error *Line does not exist*. I tried LIST and there was nothing there. Ah well, I must have missed something somewhere. Listing I works with many small Basic programs, but above a certain size Arnold just won't play ball.

Then it struck me. We need to tell the computer how long the program is. But how? Out with the Advanced Users Guide again, and there they were – the memory locations to poke with the address of the end of the Basic program.

A listing of memory with the Maxam command ı LI,&AE66 revealed that on the 6128 the end of the Basic program is stored four times in succession from address &AE66 to &AE6D. The addition of the following few lines to the assembler listing after *call &bc7a* will make everything work properly:

```
ld hl,&684d     ;length of program
ld (&ae66),hl
ld (&ae68),hl
ld (&ae6a),hl
ld (&ae6c),hl
```

The trouble with Listing I is that it will only work on a 6128 with a program called XXX that is

26k long. What we need is a program that will automatically detect the machine it is running on, work out the length of the Basic program and poke the relevant addresses before jumping to the correct address in the Basic Rom. Tell you what, we'll write it as an RSX so we can test it from Basic with:

```
a$="filename":RUN,@a$
```

– where "filename" is the name of the Basic program you want to run.

There are several ways to detect which version of Basic is present. The proper way is to call the firmware routine *KL PROBE ROM* – look it up in Soft 968. One potential problem with using this firmware call is that the Dk'tronics bank-switching command, ¦EMULATE, fools any routine calling *KL PROBE ROM* into thinking that a 6128 Basic rom is fitted, even if it isn't. So I prefer to peek the byte at &C002 in the upper rom – 0=CPC464, 1=CPC664 and 2=CPC6128. Besides, as the Basic rom is going to be enabled anyway, a peek is the simplest way.

It is very easy to find the length of a file. After the call to *CAS IN OPEN*, and assuming the file is opened correctly, the register pair BC will contain the length of the opened file. Now the program's requirements are known, the program itself can be written. Type in and save the code generated by Listing II with:

```
SAVE "barrun.bin",b,&a000,&71
```

At first this program had a habit of crashing on my 6128 and I had difficulty in finding out why. I eventually discovered that it was because of either Protext or Promerge Plus. One or both – I didn't want to unplug either to find out – changes the start address of Basic.

This is OK when you are simply word processing, but I was assembling the code using Protext and Maxam 1.5, then jumping to the routine from within Protext.

Everything works if you save the code as a binary file then reload it after resetting the computer with something like:

```
10 SYMBOL AFTER 256
20 MEMORY &9FFF
30 LOAD"barrun.bin",&A000
40 CALL &A000:NEW
```

You could add another couple of lines to Listing II to cure the problem of the clash with Arnor's roms. Simply poke the start of Basic at the same time as poking the end of Basic:

```
ld hl,&16f
ld (&ae64),hl
```

The address to poke is &AE81 on a 464 and &AE64 on a 664 or 6128. The normal start address of Basic is &170 – the value to poke is one less, &16F. The clash is in no way Arnor's fault because poking the Basic variables area is not really legit.

Poking the start address is quite interesting really. Why start programs at &170? Why not start at a different address? It is possible to load and run programs at any address from &170 to HIMEM. It is also possible to have several programs in memory at the same time, poking the start and end addresses before running any of them.

For 6128 owners – and 464/664 owners with memory expansions – there is the possibility of loading and running programs from the extra memory. A bit of bank switching in conjunction with the running of a Basic program at &4000 could be an interesting programming exercise. The only thing is, wouldn't you end up with a silicon disc operating system? And hasn't that been done before?

Listing I

```
        limit &ffff      ;Maxam assembler directive.

        org &be80
        jp start

        buffer equ &c000

        name defm "XXX"

        start  ld b,3    ;Length of filename.
                         ;Tape users can make this ld b,0
                         ;to load the next program from tape.
        ld hl,name       ;Address of filename.
        ld de,buffer     ;Address of a 2k buffer.
        call &bc77
        ld hl,&170       ;Address to load file.
        call &bc83       ;Load the file.
        call &bc7a
        ld c,0           ;Rom number zero.
        call &b90f       ;Turn it on.
        jp &ea78         ;Run Basic program 6128.
```

Listing II

```
                 org &a000
cas_in_open equ &bc77
cas_in_close equ &bc7a
cas_in_direct equ &bc83

        ld bc,namtab
        ld hl,wspace
        call &bcd1
        ret

wspace defs 4
namtab defw names

        jp runbas
        defb 0
names   defm "RU"
        db "N"+&80
        defb 0
runbas  cp 1                  ;Check for one parameter.
        ret nz
        ld l,(ix+0)           ;Get address of filename.
        ld h,(ix+1)           ;Put it into HL.
        ld a,(hl)
        ld b,a                ;Get length of filename.
        inc hl                ;Point to address of filename.
        ld e,(hl)
        inc hl
        ld d,(hl)
        ex hl,de              ;HL = address of filename.
        ld de,&c000           ;Address of a 2k buffer.
        call cas_in_open
        push bc               ;Save program length.
        ld hl,&170            ;Address to load file to.
        call cas_in_direct    ;Load the file.
        call cas_in_close
        pop hl                ;Put program length into HL.
        ld bc,&170            ;Start address of Basic program.
        add hl,bc             ;Calculate end of Basic program.
        ld c,0                ;Rom number zero.
        call &b90f            ;Turn it on.
        ld a,(&c002)          ;Get rom type.
        cp 0                  ;If it's type zero,
        jp z,cpc464           ;jump to 464 routine,
        ld (&ae66),hl         ;else
        ld (&ae68),hl         ;poke
        ld (&ae6a),hl         ;Basic
        ld (&ae6c),hl         ;variables 664/6128.
        cp 1                  ;If it's rom type one,
        jp z,cpc664           ;jump to 664 routine,
        jp &ea78              ;else run Basic program 6128.

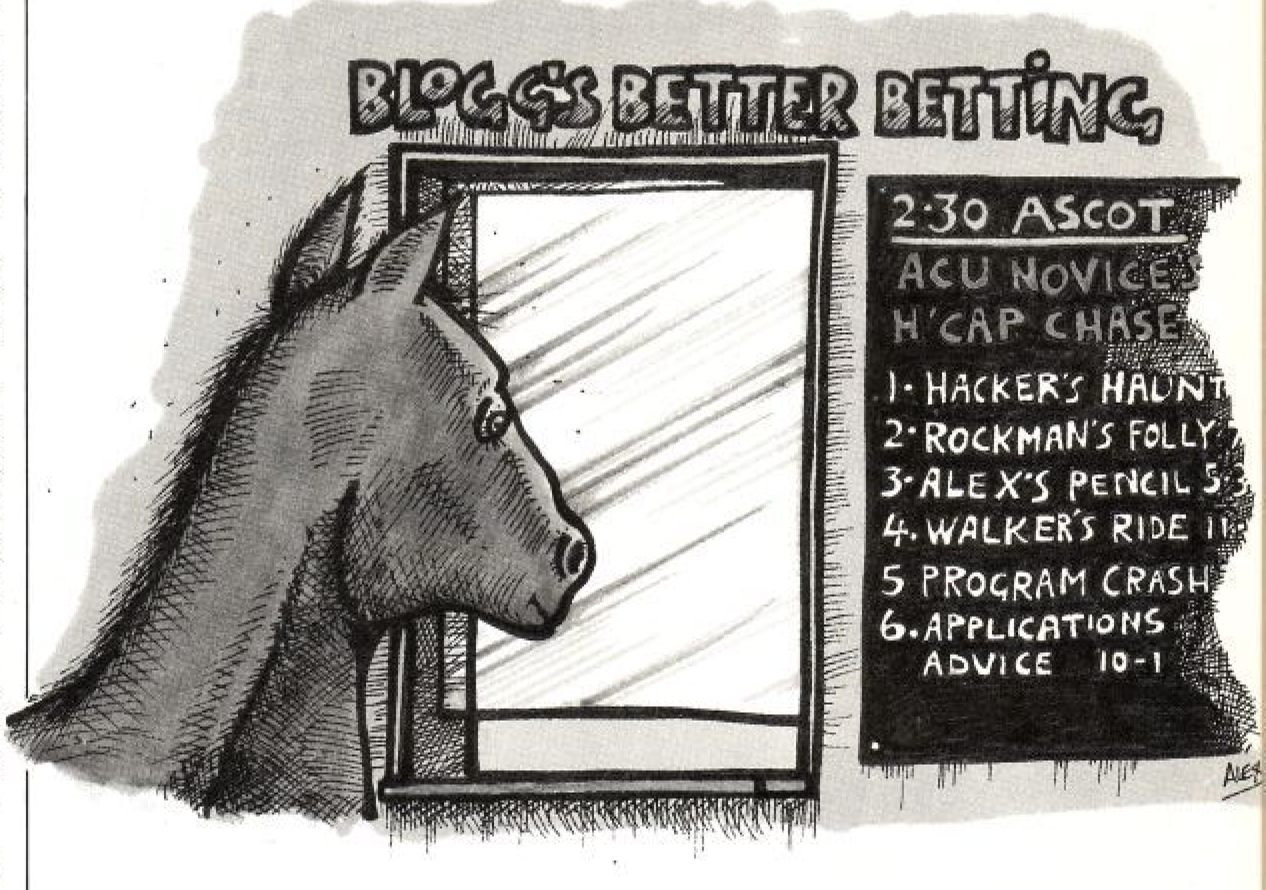
cpc664  jp &ea7d              ;Run Basic program 664.

cpc464  ld (&ae83),hl         ;Poke
        ld (&ae85),hl         ;Basic
        ld (&ae87),hl         ;variables 464.
        ld (&ae89),hl
        jp &e9bd              ;Run Basic program 464.

        end
```

Straight from the horse's mouth

Pro-Punter (6128 only) costs £57.50 from DGA Software, PO Box 36, Ashton-under-Lyne, Lancs, OL7 9AJ. (Tel 061-330 0184).



David Dorn hedges his bets on a package that's odds on favourite to win by a nose

I HAVE never seen a poor bookie. I know one whose Mercedes is due for an MOT and another who has had to cut his vacation to only a four week cruise on the QEII, but penniless is a term that cannot be applied to the accountants of the turf. They make their money by allowing ordinary people like you and me to make wagers on the outcome of varying incidents, including the sex of the latest royal baby and all manner of other things.

But the mainstay of their incomes is the loot they pocket from the followers of the sport of kings. Ah yes, the turf accountants of this world absolutely love the casual punter.

The majority of casual punters apply no system to their bets. Some back a nag on the basis of its name. The bookie, however, has a team of folk applying hard-won racing knowledge to the form of each horse in a race, making expert predictions of the outcome. It's on this basis that the odds the punter is quoted are initially arrived at. After that the number of bets for each horse, and their amounts, influence the odds either up or down.

That is the bookie's advantage and why he rarely makes a loss. If the punter had the same team working for him, the chances of making an inroad into his bookie's profit might well improve.

If you think about it for a nanosecond you might well come to the conclusion that there must be a set of rules that can be applied to the analysis of racing form. If that is the case – and it is – then why not find a way to speed up the acquisition of the analysis skills, then speed up the application of them, put the whole caboosh into a package that anyone can use, call it Pro-Punter and charge about £60 for it? Too late, I'm afraid – it's already been done.

For better or for worse

Having made my contribution toward the odd cruise round the Med for the odd bookie in my time, I was more than happy to take a look at the CPC-owning punter's latest tool for redressing the balance. Redressing the balance? It was going to have to do a lot more than pay for itself to do that.

Rumour has it that all bookies are, shall we say, perturbed at the thought of some high roller who invents or discovers the perfect betting system, so you'd have thought that Pro-Punter would have them shaking in their boots.

Not so. At least the chap who continually makes sure that I don't waste my hard-earned cash on fripperies like booze and fast cars reckons it can only do him good because the "mug punters" will read the reviews, rush out and buy it, and then start contributing to the never-ending pit that seems to be his bank balance.

But Pro-Punter is a very cautious tipster; it tends to advise a no-bet rather more often than Fair Frank Fairclough would like.

Pro-Punter, in its rather nice turf-green packaging, doesn't guarantee dead certs, but it does hold the promise of helping the cautious investor reap a rather larger reward than might otherwise be the case. In effect, the program is a computerised form analyst, giving non-emotional advice on the basis of information supplied to it. In other words, it applies a system, makes a forecast and advises on the prospect of making a profit from an investment.

Just in case you aren't familiar with punter terminology, we don't make bets, we *invest in certain animals*. We don't see which horse has a name we like, we *weigh up the form*. And we never lose money – we *make a poor investment*. Ahem.

The CPC version of Pro-Punter is a development from the early-1987 BBC Micro program, which has shown some quite remarkable statistics since then. Indeed, it is DGA's proud claim that from 22 races, advice from Pro-Punter resulted in 17 winners with a 100 per cent return over stake. The blurb says that you don't have to be an expert in the turf to use the program because it adjusts automatically to suit the race under analysis.

The best way to put the thing to the test, thought I, was to proof it to myself over a period of weeks, first without risking any money and then, if the dry run proved successful, with a few smallish investments.

The 16-page manual is perfectly adequate for its purpose. The text is well laid out and quite readable, though there are some sections that could do with being couched in slightly less confusing terminology. That means it might be too difficult for some people to read and understand – including me.

Reading through it the first time may take a little doing, but further dips as the program is used makes everything much clearer. Be advised though, you will need to dip into the manual often.

The next step is to gather around you the necessary bits and bobs to make the thing usable – some blank formatted discs, a copy of the Sporting Life or Racing Post – which all

households take daily anyway, don't they? – and a supply of cash to invest.

Please, take note of the paragraph in the manual that tells you to use only money that you can afford to lose. Investing in horse racing is at best a risky business and at worst the road to the debtor's prison. If you aren't already hooked, don't start now. Sermon over.

The blank discs are to make your working disc – yes, Pro-Punter is unprotected – and to hold your library files, of which more later.

Making the running

Having made the working copy, the next thing you're going to want to do is try the thing out. If you're anything like me, you'll crash it with a Basic error within two minutes of running it.

The opening screen offers six choices, consisting of input stages one to six, and the results menu. Selecting stage one loads the trainers file. This is where you can maintain a record of the success or otherwise of your favoured trainers.

It was here that I bombed out into Basic. Since it didn't already exist, I selected to update the file and then just pressed Return to see what the error checking was like. The result was *Syntax error in 470* rapidly followed by *Line does not exist in 0*, neither of which exactly filled me with confidence.

Oh well, back to the start. Re-boot and remember not to make any silly mistakes that ought to be error trapped.

This time all went hunky dory, and I managed to get on to input stage two, which covers the recent form of each horse in the race. For anyone unfamiliar with the way the form information is presented in the racing press, this and subsequent input stages may well prove to be the major hurdle.

However, as in all things, practice makes perfect. There is a guide in the manual to the formats used in the two recommended publications. This could be made clearer, but is OK as a starting point. All the input stages are basically a matter of answering the necessary questions – fairly straightforward, if time-consuming.

After about 45 minutes all the data was keyed in and Pro-Punter kicked into analysis mode. A short time later – about four minutes, actually – I realised that this race wasn't going to make me any money. Pro-Punter in its wisdom decided that although it had identified a possible winner, it was not a good bet. Oops, sorry, not a *worthwhile investment*.

The manual had warned of occurrences such as this and wisely advises the putative bookie-basher to heed the warning. As it happened, the nag that came out top of the list romped home a good two lengths ahead of the field and could probably have won the race in plaster. But then again, it could easily have fallen at the first.

I'll not go too much further with descriptions of all the menus, instead I'll point out a few of the features and pitfalls I noticed along the way.

Firstly, the saving of trainer tables as library files is likely to be a godsend to the regular punter. I've found that following a specific stable, or a small number of stables, tends to give the highest return for investments made, so having that information on tap is not only time-saving, but gives a guide to the form for those times when you might not wish to have Pro-Punter's advice. After all, everybody likes to do it off their own bat every so often.

One thing which is missing – left out at the last minute, according to the manual – is a results database, something which might alleviate much of the tedious data entry process and speed up analysing a particular field considerably.

It seems that there were reliability problems, which I assume is a euphemism for "it didn't work". This is a shame, but into each life a little rain must fall. Why it has to fall on the course that I've told Pro-Punter has good going is beyond me.

There may be the possibility of creating library files on individual horses in a subsequent version – the version tested was 1.2 – which would have a similar effect to the above.

The verdict

The be all and end all of a program such as this is will it make you richer? Well, there has never been a system that would beat all the bookies all of the time. But, to coin a phrase, Pro-Punter will beat some of the bookies all of the time, and all of the bookies some of the time.

If you heed the program's advice and only bet when it tells you to, you won't lose much money. If on the other hand you become impatient with its no-bet forecasts and start backing the top rated horse in every race you analyse, your hit rate will almost certainly drop.

Either way, Pro-Punter is not a replacement for commonsense when it comes to parting with money. As I said earlier, I wouldn't risk the rent on its advice, no matter how well it had done over a period. By all means rake a small wad together and play the field with that, but don't get the idea that this program is going to make you unbelievably wealthy. There are very few professional gamblers, and none that I know of uses a computer to advise them.

This isn't meant as a criticism of Pro-Punter in any way whatsoever, but as a general warning about all forms of computer assisted gambling. In this case the program lives up to its advertising copy, so I can't knock it, but in many ways it takes the fun out having a flutter. It will probably pay for itself over a season, and it may well help you make a few bob, which is about as good a recommendation as anybody could possibly give.

No doubt the sceptics among you will be wondering how much money Pro-Punter helped me rake in. I'm not going to tell you. Let's just say that my local bookie's son has a 6128, reads *ACU*, and not all of my investments were made in my own name. Why? Because I don't want to be banned from the betting shop, that's why.

And, Mr Editor sir, that doesn't mean I don't expect to be paid. *(You'll get your money, Mr Dorn, once you've coughed up my share of the winnings. Ed).*


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STAKE SELECTION TIME
£10 WIN Direct Approach 4.20 Cheltenham
Please time all bets
STAKE £10
TAX
TOTAL INV. £10
All bets accepted subject to our Rules
PAY OUT

Pro-Punter advised no-bet on this top rated selection (bad value). It won, but at very short odds of 11/10.


I. R. RACING LTD.
STAKE SELECTION TIME
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Are You Getting It Every Day?

Keith Pomfret reveals tasteless tabloid in computer coup

YOUR Fun Sun has leapt into the computer age with a bound into technology so brave Einstein would have cubed mc if he were here today. The two most prominent features of your sizzling Sun are now to be found right beneath your fingers on the desk in front of you. Samantha who? No, it's the Sun Crossword Puzzles.

Where else could you find mistress, resent, aroused, gallop and sweat with only a thin line drawn between them. Are you a wordsmith of the highest order? To find out, read on.

Britain's brightest daily has linked up with Akom Ltd to bring us The Sun Computer Crossword Puzzles Volumes One to Four. At first glance each volume is a computerised book of 60 slightly cryptic Sun Crosswords.

A quick delve into the instructions was needed here. In true tabloid tradition I started at page three. There at the top of the page, in boldest type, "MISTRESS." No smutty picture though. No inuendo. Just an in-depth analysis of puzzle number one showing us how the answers are come by.

A cunning ploy by author David Akenhead has put the loading instructions in the middle of the booklet, after you have waded through the analysis and before you get to the sections on instructions, abbreviations and convention indicators.

Loading is a simple matter – it would have to be wouldn't it? – of run "sun" for all the CPCs, tape and disc, and when loaded a choice of crossword number. Crossword loaded, you are presented with an empty grid and the prompt for which clue. So far nothing spectacular. In fact a 10 minute walk to W.H.Smith and I could pick up a book of Sun Crosswords for a couple of quid, so this computerised one will have to be something very special to justify the best part of 10 times that.

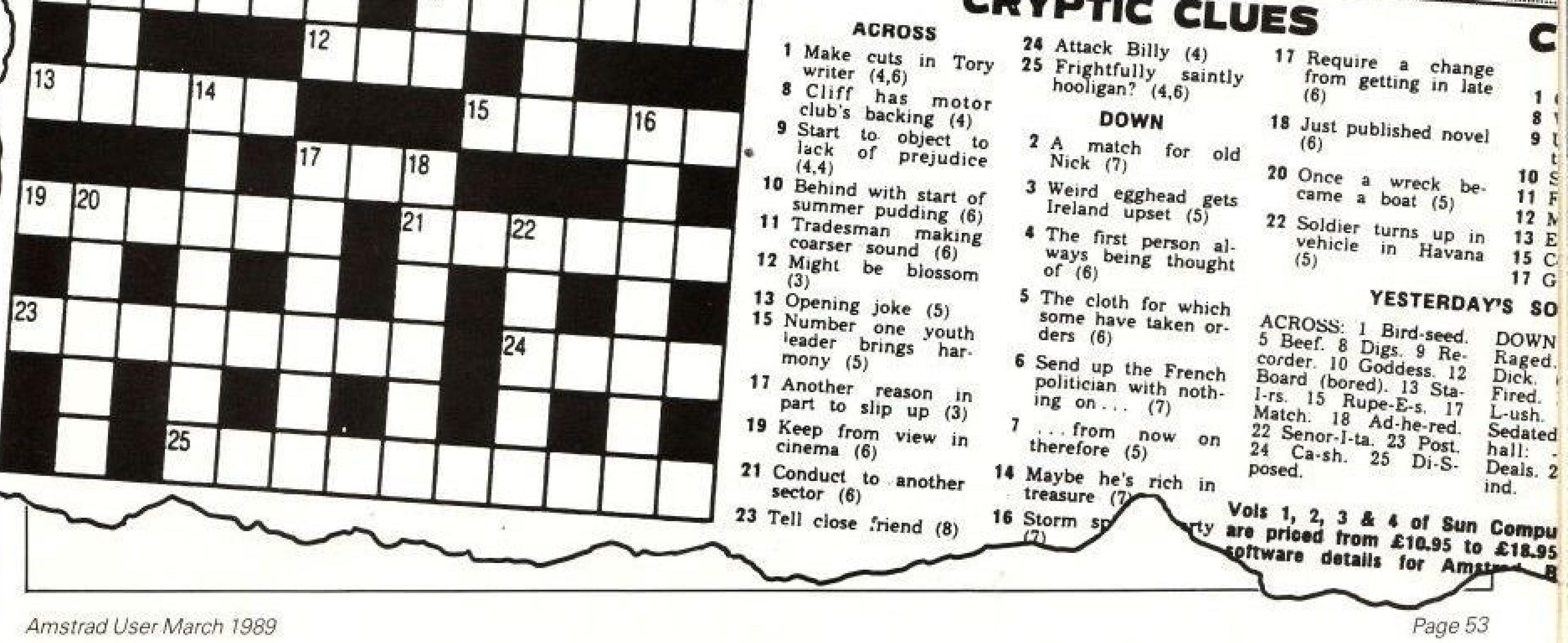
If it were just puzzles, clues and solutions I would write it off as a very expensive gift novelty. As a person who avidly checks the following day in the newspaper to see the solution and often wonders what the bridge between clue and solution is, these programs are an enlightenment.

There are five levels of difficulty within the puzzles. The entry level takes you straight into a cryptic crossword. As the manual suggests, this should provide "hours of competitive stimulus for the seasoned cryptic crossword solvers".

That's all very well, but there are always a couple of tricky ones and if they are vital to the completion of the puzzle it can be frustrating. Enter level two with the choice of marking the clue. If you attempt the solution from here, the correct letters can be made to appear in upper case while those guessed wrongly remain in lower case.

If it's the morning after the night before and a kick in the synapses is needed then it's on to level three where the type of clue is revealed. You need the last page of the manual to translate the





abbreviations back to their meanings. This look into the compiler's mind is a helpful clue as to the way these things are created and as such are more than a mere clue.

Sinking to the depths of "Does paraffin really do that to your brain if you drink it," level four, aptly called Coffee Time for its instant answers and clues so simple an Amstrad Action reader could do them.

Just by accident I found level five described as for beginners. This one gives you a coffee time clue with its first letter included. On the Stamford Binet scale of intelligence, this is about as low as a goldfish's armpit when it's lying in the gravel.

To get from the high levels to the low is done a level at a time and I found that if I stopped for a minute and thought about it, I could with a bit of effort solve a higher level than usual. If I couldn't and had to progress to a lower level, each taught me a little more about the way the clue had been built in the mind of the compiler.

There is no set order in which you have to do the puzzles, with puzzle and clue numbers being prompted for. With four volumes of 60 puzzles available there are enough to keep even an addict going for some time.

The difficulty with programs like these is that the puzzles will always remain the same. If you started at puzzle one as a beginner and became more proficient you would have to keep going on for a challenge. There is no way to alter the clues or their solutions in the earlier puzzles – they can only be used once.

Once all the puzzles have been completed they won't offer much challenge unless left alone for a long time. This is true of crossword books, but they are cheap enough to be considered consumable.

The analysis of puzzle number one in each volume is a useful tutor, with each clue laid out and explained. For Example

1 Across: Woman boss causes tension on motorway (8)

Solution:- MISTRESS

Indicator Du (word division. parts of more than one word combined.)

Explanation M1 is an abbreviation for a "motorway" and STRESS is "tension"; on means attached to. MISTRESS is a "woman boss."

5 Across: Must vary dirty stories (4)

Solution:-SMUT

Indicator An (Anagram)

Explanation Anagram of "must" with "vary" the anagram indicator.

Two examples taken at random from the volumes and indicative of the sort of tutorial available. With over 90 convention indicators and three pages of abbreviations there's a lot to take in, but it's all laid out in a clear and concise manner.

An introduction to Cryptic Crosswords from Edmund Akenhead, former editor of Times crosswords, gently leads you a little way into the black art of compilation, but, before you are frightened away, describes the analysis thus: "An ounce of practical demonstration being worth a pound of theory, I set out the explanations of every clue in the first puzzle of this collection".

As a simple collection of crossword puzzles, the best part of £20 is too much even for an enthusiast. The Sun Crossword puzzles gain their real value from the help levels and tutorial and from being professionally published and documented.

To steal the description of the Giant's Causeway: "Worth seeing but not worth going to see." I would be grateful to receive them as a gift and that is where I think most will be sold, as gifts. I would be loath to part with my own money for them.

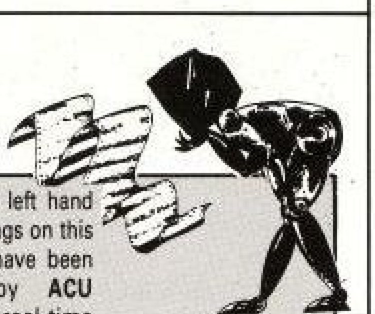
To give the author the final word: "The game becomes a contest between you and the computer as to who can resolve the greatest number of clues at the highest possible level, in the shortest possible time, points being awarded according to level".

10 LINERS

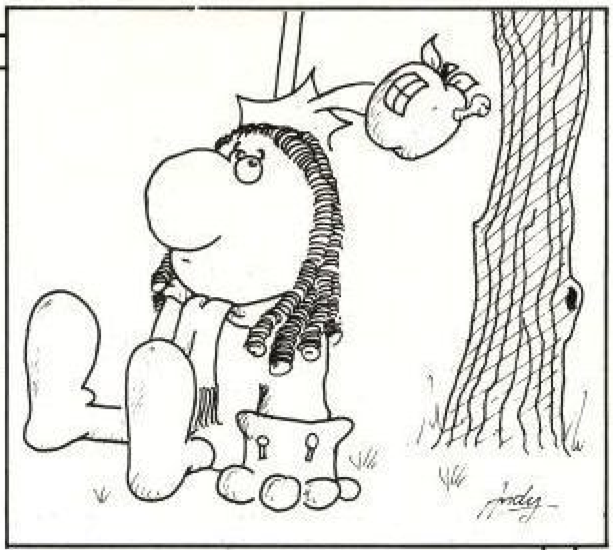
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The figures in the left hand column of the listings on this page show they have been checksummed by **ACU Proofreader**, the real-time type-in tester published in the January 1989 issue of *Amstrad Computer User*. You don't need **ACU Proofreader** to be able to run this listing, but having it makes spotting typing errors very easy.



CATCH by David Hall

THIS has got to be the most impressive 10-liner ever published. It's a mini arcade game written almost entirely in machine code featuring large, smooth-scrolling multicoloured sprites with a bit of sound thrown in for good measure.

The idea is to put on your Isaac Newton hat and catch as many falling apples as you can. You get 10 points for each apple caught. Miss one and it's game over.

Take care with typing it in; we *strongly* advise using Proofreader with this listing because the machine code below is not checksummed. And do remember to SAVE before you RUN.

Control is via the joystick. David, whose high score is 1,670 points, has been a bit sneaky here. To make the game more difficult, left is right and right is left. No cheating now!

```
[24] 10 FOR t=20000 TO 20349:READ a$:
     POKE t,VAL("&"+a$):NEXT:FOR t=10
     000 TO 10288:READ a$:POKE t,VAL(
     "&"+a$):NEXT:INK 0,0:BORDER 0:PA
     PER 0:a$=CHR$(238)+SPACE$(18)+CH
     R$(238)
[87] 20 MODE 0:CLS:PEN 12:FOR t=1 TO
     10:LOCATE 1,t*2:PRINT a$;:NEXT:P
     EN 9:FOR t=1 TO 10:LOCATE 1,t*2+
     1:PRINT a$;:NEXT:LOCATE 1,22:FOR
      t=1 TO 20:PEN 1:PRINT CHR$(238)
     ;:NEXT:PEN 7:LOCATE 1,24:PRINT "
     SCORE >>":PEN 6:LOCATE 1,25:PRIN
     T "* CATCH * by D.Hall";:PEN 3
[3B] 30 DATA 30,30,30,30,30,30,30,30,
     25,f,f,f,f,f,f,1e,25,f,f,f,f,f,f
     ,1e,25,c,c,c,c,c,c,1e,25,d,f,f,f
     ,f,1e,1e,25,d,f,f,f,f,1e,1e,25,d
     ,f,f,f,f,1e,1e,25,d,f,f,f,f,1e,1
     e,25,1c,3c,3c,3c,3c,3c,1e,25,f,f
     ,f,f,f,f,1e,25,f,f,f,f,f,f,1e,34
     ,3c,3c,3c,3c,3c,3c,3c,0,0,0,0
[ED] 40 DATA 0,0,0,0,0,0,0,0,0,0,0,0,
     0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
     0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
     0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
     0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
     0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
     0,0,0,0,33,0,0,0,0,0,0,11,22,0,0
     ,0,0,0,44,88,44,88,0,0,0,44,cc
[77] 50 DATA cc,cc,cc,88,0,0,cc,30,cc
     ,cc,cc,cc,0,0,98,30,64,cc,cc,cc,
     0,44,98,30,64,cc,cc,cc,88,44,98,
     30,64,cc,cc,cc,88,cc,cc,30,cc,cc
     ,cc,cc,cc,cc,cc,cc,cc,cc,cc,cc,c
     c,cc,cc,cc,cc,cc,cc,cc,cc,cc,cc,
     cc,cc,cc,cc,cc,cc,cc,cc,cc,cc,cc
     ,cc,cc,cc,cc,cc,cc,cc,cc,cc
[26] 60 DATA cc,cc,44,cc,cc,cc,cc,cc,
     cc,88,44,cc,cc,cc,cc,cc,cc,88,0,
     cc,cc,cc,cc,cc,cc,0,0,cc,cc,cc,c
     c,cc,cc,0,0,44,cc,cc,cc,cc,88,0,
     0,0,44,cc,cc,88
[CD] 70 DATA 21,c2,c5,22,a0,8c,11,20,
     4e,cd,1,28,af,32,4,8d,32,28,a0,c
     d,3d,27,cd,d3,27,cd,6a,27,3a,28,
     a0,fe,0,c0,cd,6a,27,3a,28,a0,fe,
     0,28,ea,c9,21,40,9c,6,7,36,30,23
     ,10,fb,21,18,c,cd,75,bb,21,46,9c
     ,6,7,7e,cd,5a,bb,2b,10,f9,c9,21,
     41,9c,7e,fe,39,20,5,36,30,23
[7A] 80 DATA 18,f6,34,18,dd,3a,4,8d,f
     e,0,20,17,3c,32,4,8d,32,7,8d,ed,
     5f,fe,5,38,fa,fe,45,30,f6,26,c0,
     6f,22,5,8d,3a,7,8d,fe,92,28,3e,3
     c,32,7,8d,2a,5,8d,cd,26,bc,22,5,
     8d,11,f0,0,19,cd,29,bc,cd,29,bc,
     7e,fe,0,20,11,11,7,0,19,7e,fe,0,
     20,8,11,d0,4e,2a,5,8d
[1C] 90 DATA 18,45,af,32,4,8d,3e,7,cd
     ,5a,bb,cd,5a,27,11,80,4f,18,ea,3
     e,1,32,28,a0,c9,3e,4b,cd,1e,bb,2
     0,8,3e,4a,cd,1e,bb,20,33,c9,2a,a
     0,8c,2b,7e,fe,0,c0,11,8,0,19,6,c
     ,36,0,cd,26,bc,10,f9,2a,a0,8c,2b
     ,22,a0,8c,11,20,4e,e,16,e5,6,8,1
     a,77,13,23,10,fa,e1,cd,26
[AC] 100 DATA bc,d,20,f0,c9,2a,a0,8c,
     11,8,0,19,7e,fe,0,c0,2a,a0,8c,6,
     c,36,0,cd,26,bc,10,f9,2a,a0,8c,2
     3,18,ca:CALL 10000:PEN 15:LOCATE
      3,11:PRINT "Ha! You Missed !":F
     OR t=1 TO 15:SOUND 1,t,3,15:SOUN
     D 2,t+5,3,15:NEXT:FOR t=1 TO 420
     0:NEXT:GOTO 20
```

VALENTINE by David Hall

HERE'S one specially for Valentine's Day. It uses sine and cosine routines to draw the outline of a love heart on the screen, and then colours it in using a Basic fill, the nested loops in lines 30 to 70.

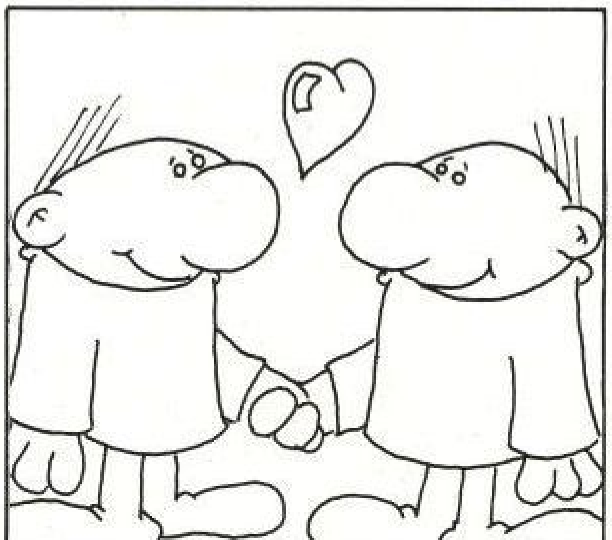
When the heart is complete – and it takes about eight minutes – you can press the space bar to save the whole thing as a 16k screen image.

It's then ready to be loaded into a screen design package, like Art Studio for instance, where you can paint your valentine's name on it in large letters and dump it out to your printer.

David says if this listing gets published he'll spend the winnings on his girlfriend. Ahh, isn't that sweet.

Never let it be said that there is no romance in computer programming.

```
[71] 10 b=120:INK 1,16:INK 0,0:BORDER
      0:PAPER 0:MODE 1:PEN 1:CLS:FOR
     t=0 TO 999:PRINT CHR$(228);:NEXT
     :DEG:FOR t=0 TO 155:PLOT 420+b*C
     OS(t),260+b*SIN(t),3:NEXT
[E4] 20 FOR t=88 TO 180 STEP 0.4:PLOT
      310+230*SIN(t),250+240*COS(t):N
     EXT:FOR t=180 TO 273 STEP 0.4:PL
     OT 310+230*SIN(t),250+240*COS(t)
     :NEXT
[3E] 30 FOR t=26 TO 180:PLOT 200+b*CO
     S(t),260+b*SIN(t):NEXT
[00] 40 FOR x=82 TO 538 STEP 2:f=1:FO
     R y=10 TO 378 STEP 2
[89] 50 IF TEST(x,y)=3 THEN f=3-f:WHI
     LE TEST(x,y)=3:y=y+2:WEND
[DD] 60 IF f=2 THEN PLOT x,y,3
[7C] 70 NEXT:NEXT
[30] 80 IF INKEY$<>" "THEN 80 ELSE SPE
     ED WRITE 1:SAVE"!valent",b,&C000,
     &4000:GOTO 80
```



10 LINERS



The figures in the left hand column of the listings on this page show they have been checksummed by **ACU Proofreader**, the real-time type-in tester published in the January 1989 issue of *Amstrad Computer User*. You don't need **ACU Proofreader** to be able to run this listing, but having it makes spotting typing errors very easy.

STRANGE CUBE
by David Mortell

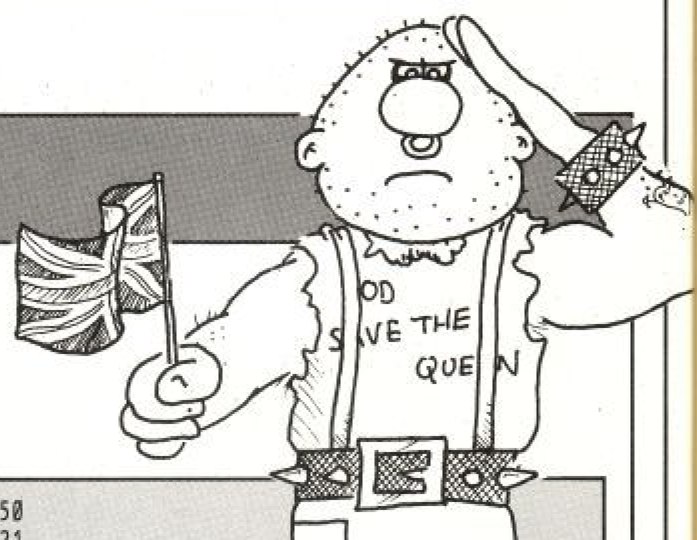
WHEN David Mortell saw Escher's Triangle in November's *CPC Computing* he said to himself; "Hey, that look's easy! I'll try a cube". But it wasn't that easy. It took him many hours to come up with Strange Cube.

David has given up on the never-ending staircase idea, but has almost finished an infinite water mill. Infinite water mill? Get it down to 10 lines, whatever it is, and it *could* win you a tenner.



```
[85] 10 DEFINT a-o,r-z:PEN 1:PAPER 0:
     MODE 1:BORDER 5:INK 0,0:INK 1,26
     :INK 2,16:INK 3,8:n=20
[14] 20 m=220:b=5:x=280:y=140:GOSUB 1
     00:b=6:x=260:GOSUB 100:m=200:b=1
     :x=280:y=160:GOSUB 100:b=2:y=140
     :GOSUB 100
[48] 30 m=220:b=1:x=260:y=360:GOSUB 1
     00:b=2:y=340:GOSUB 100:b=5:x=480
     :y=140:GOSUB 100:b=6:x=460:GOSUB
     100
[52] 40 b=4:x=170:y=30:GOSUB 100:b=3:
     x=150:y=50:GOSUB 100:m=240:b=4:x
     =160:y=220:GOSUB 100:b=3:x=140:y
     =240:GOSUB 100
[65] 50 b=4:x=360:y=20:GOSUB 100:b=3:
     x=340:y=40:GOSUB 100:m=280:b=4:x
     =360:y=220:GOSUB 100:b=3:x=340:y
     =240:GOSUB 100
[BC] 60 m=220:b=1:x=140:y=40:GOSUB 10
     0:y=20:b=2:GOSUB 100:m=200:b=5:x
     =160:y=40:GOSUB 100:b=6:x=140:GO
     SUB 100
[22] 70 m=220:b=5:x=360:y=20:GOSUB 10
     0:b=6:x=340:GOSUB 100:b=1:x=140:
     y=240:GOSUB 100:y=220:b=2:GOSUB
     100
[DE] 80 b=5:x=280:y=200:m=60:GOSUB 10
     0:b=6:x=260:GOSUB 100:b=1:x=320:
     y=160:GOSUB 100:b=2:y=140:GOSUB
     100
[90] 90 WHILE INKEY$="":WEND:END
[6B] 100 i=1+(b=2)+(b=4):j=1+(b=6)+(b
     =3):p=(1+(b>4)-(b<3))/2:q=(1+(b<
     3)-(b>4))/2:c=-(b=2)-(b=6)-3*(b=
     3 OR b=1)-2*(b=4 OR b=5):FOR a=0
     TO n STEP 2:MOVE x+a*i,y+a*j:DR
     AWR m*p,m*q,c:NEXT:RETURN
```

NATIONAL ANTHEM
by Fergus Leen



NO clever programming techniques here. But a lot of time and patience has been put into programming this three-channel rendition of God Save The Queen. Gotta be worth a fiver.

Fergus says it sounds best through stereo speakers. So does Status Quo.

Woops... almost forgot... stand up before you run this one.

```
[97] 10 GOSUB 90
[58] 20 READ a,ad,b,bd,c,cd:IF a=-1 T
     HEN FOR f=0 TO 3000:NEXT:LOCATE
     4,10:PRINT STRING$(30,CHR$(247))
     :END ELSE SOUND 1,a,ad:SOUND 2,b
     ,bd:SOUND 4,c,cd:GOTO 20
[9D] 30 DATA 159,100,253,100,319,100,
     159,100,190,100,379,100,142,100,
     239,100,478,100,169,150,284,150,
     426,150,159,50,284,50,379,50,142
     ,100,284,100,338,100,127,100,213
     ,100,319,100,127,100,190,100,379
     ,100,119,100,190,100,478,100
[2F] 40 DATA 127,150,213,150,426,150,
     142,50,239,50,478,50,159,100,253
     ,100,379,100,142,100,239,100,478
     ,100,159,100,253,100,426,100,169
     ,100,284,100,426,100,159,100,253
     ,100,638,100,159,50,253,50,426,5
     0,142,50,213,50,478,50,127,50,21
     3,50,506,50
[9D] 50 DATA 119,50,213,50,568,50,106
     ,100,213,100,638,100,0,1,0,1,0,1
     ,106,100,213,100,506,100,0,1,0,1
     ,0,1,106,100,213,100,426,100,0,1
     ,0,1,0,1,106,150,213,150,319,150
     ,119,50,213,50,426,50,127,100,21
     3,100,319,100
[CA] 60 DATA 119,100,213,100,426,100,
     0,1,0,1,0,1,119,100,213,100,338,
     100,0,1,0,1,0,1,119,100,213,100,
     284,100,0,1,0,1,0,1,119,150,213,
     150,426,150,127,50,213,50,319,50
     ,142,100,213,100,426,100
[E6] 70 DATA 127,100,213,100,319,100,
     119,50,213,50,284,50,127,50,213,
     50,319,50,142,50,213,50,338,50,1
     59,50,213,50,379,50,127,50,213,5
     0,426,50,127,50,213,50,478,50,12
     7,50,213,50,506,50,119,50,213,50
     ,568,50,106,100,213,100,638,100
[0F] 80 DATA 95,50,190,50,478,50,119,
     50,190,50,478,50,127,100,213,100
     ,426,100,142,50,213,50,426,50,14
     2,50,213,50,478,50,159,250,253,2
     50,638,250,-1,0,0,0,0,0
[00] 90 SYMBOL AFTER 32:SYMBOL 247,11
     2,112,64,112,64,120,8,8:MODE 1:P
     RINT "          GOD SAVE THE QUEE
     N":LOCATE 9,2:PRINT STRING$(20,C
     HR$(208)):LOCATE 4,10:PRINT STRI
     NG$(30,CHR$(247)):FOR f=0 TO 900
     :NEXT:LOCATE 4,10:PRINT STRING$(
     30,CHR$(248))
[8B] 100 LOCATE 18,4:PRINT " Converte
     d by Fergus Leen (Mushroom)":RET
     URN
```

AMSTRAD Computer User

FREE TAPE

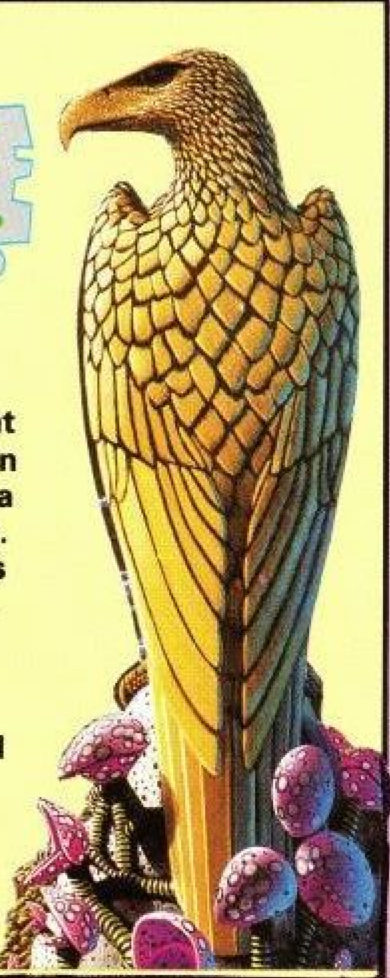
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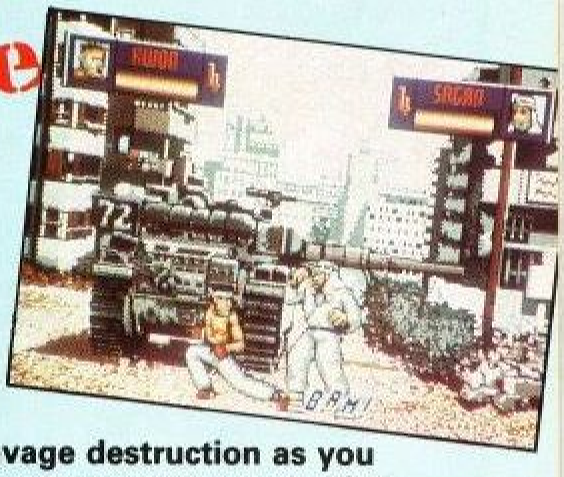
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– featured on the front cover of November's *ACU* – in which you must escape from a horrendous dungeon complex. In the full version each level is totally different from the last, some in solid 3D, others are ladders and levels – and so on. Once you've completed the first level we're sure you'll want to have a go at the others, so next month you'll be able to send for a copy direct from us, and with a few quid knocked off!

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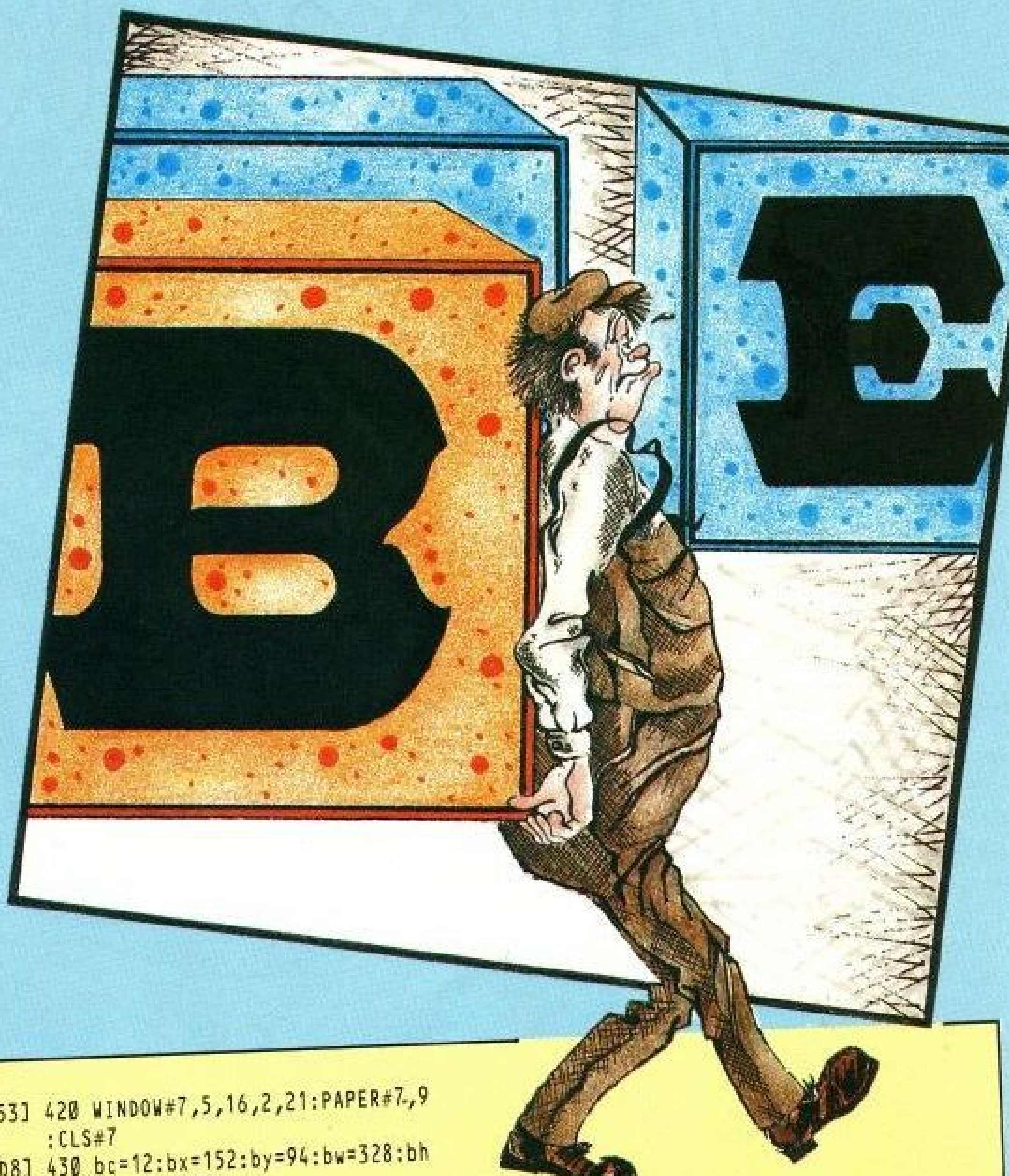
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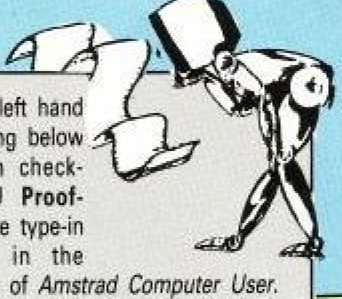
Blockit

Can you crack Ian Sharpe's fiendish puzzle?



HERE's an interesting variation on the sliding block puzzle theme that we guarantee will keep you hooked for hours – if not weeks. The idea is quite simple. All you have to do is manoeuvre the large block on the left – marked B – fully into the flashing square on the right. At each move you will be asked for the letter corresponding to the block to be moved, and then one of the arrow keys to show which way it is to go.

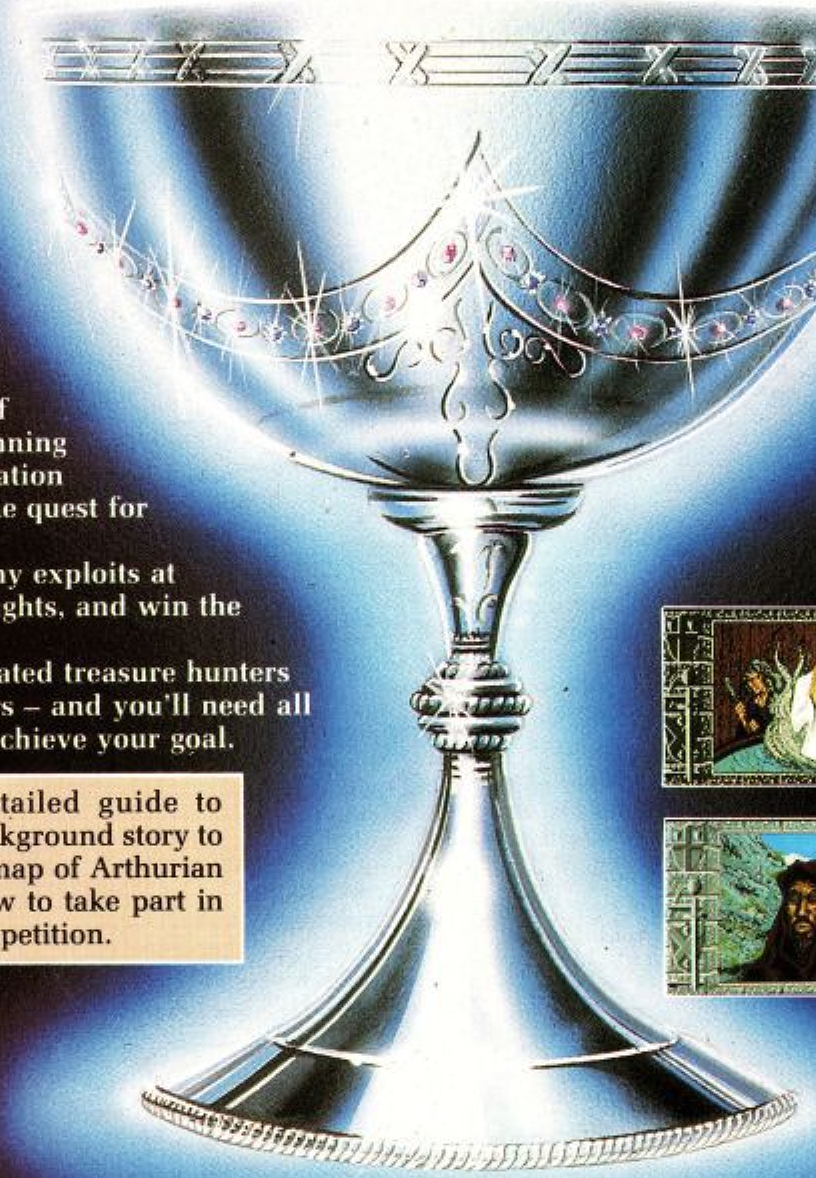
There is no time or move limit because the problem is difficult enough as it is. In fact we haven't even solved it ourselves, but we are assured that it can be done.



The figures in the left hand column of the listing below show it has been checksummed by **ACU Proofreader**, the real-time type-in tester published in the January 1989 issue of *Amstrad Computer User*. You don't need **ACU Proofreader** to be able to run this listing, but having it makes spotting typing errors very easy.

```
[A1] 100 ' Blockit
[A3] 110 ' By Ian C. Sharpe
[A5] 120 '
[A7] 130 ' Initialise
[4B] 140 MODE 0:BORDER 0
[27] 150 FOR i=0 TO 12:READ j
[6E] 160 INK i,j:NEXT
[FF] 170 DATA 0,25,15,6,5,22,8
[39] 180 DATA 4,13,26,9,24,13
[34] 190 INK 15,6,0
[06] 200 SPEED INK 15,15
[83] 210 PEN#7,0
[31] 220 DEFINT a-z
[8B] 230 DIM a(6,6),b(4,4),d(4,2)
[F9] 240 FOR i=0 TO 6:FOR j=0 TO 5
[3D] 250 a(i,j)=99:NEXT:NEXT
[00] 260 FOR i=1 TO 4:FOR j=1 TO 5
[27] 270 READ a(j,i):NEXT:NEXT
[18] 280 DATA 3,3,6,6,10
[64] 290 DATA 2,2,5,9,0
[43] 300 DATA 2,2,5,8,0
[5F] 310 DATA 1,1,4,4,7
[41] 320 FOR i=1 TO 4
[63] 330 READ d(i,1),d(i,2):NEXT
[E6] 340 DATA 0,-1,0,1,-1,0,1,0
[F8] 350 PAPER 10:CLS
[AE] 360 FOR i=40 TO 639 STEP 80
[12] 370 MOVE 0,i:DRAWR 640,0,11
[3F] 380 MOVE i,0:DRAWR 0,398:NEXT
[88] 390 WINDOW 1,20,24,25:PAPER 0:CL
     S
[77] 400 WINDOW#7,6,17,3,22:PAPER#7,0
     :CLS#7
[D8] 410 bc=12:bx=132:by=62:bw=382:bh
     =318:GOSUB 780
[53] 420 WINDOW#7,5,16,2,21:PAPER#7,9
     :CLS#7
[D8] 430 bc=12:bx=152:by=94:bw=328:bh
     =260:GOSUB 780
[63] 440 bc=0:bx=156:by=94:bw=326:bh=
     258:GOSUB 780
[BB] 450 GOSUB 730
[B0] 460 ' Play
[11] 470 incomplete=-1:WHILE incomple
     te
[45] 480 DRAW 0,126:DRAWR 126,0:DRAWR
     0,-126:DRAW 0,0
[88] 490 WHILE INKEY$<>"":WEND:PRINT C
     HR$(18);:INPUT"Letter :",c$:c$=UP
     PER$(c$):IF c$<"A" OR c$>"J" THEN
     490 ELSE lc=ASC(c$)-64
[6A] 500 PRINT"Direction "CHR$(240)CHR
     $(241)CHR$(242)CHR$(243);
[1C] 510 WHILE INKEY$<>"":WEND:d$="":WH
     ILE d$="":d$=INKEY$:WEND
[DE] 520 IF d$<CHR$(240) OR d$>CHR$(2
     43) THEN 510 ELSE dc=ASC(d$)-239
     :PRINT:PRINT
[1F] 530 ok=-1:bp=0:FOR i=1 TO 6:FOR
     j=1 TO 4
[E6] 540 IF a(i,j)<>lc THEN 570
[BB] 550 bp=bp+1:b(bp,1)=i:b(bp,2)=j:
     b(bp,3)=i+d(dc,1):b(bp,4)=j+d(dc
     ,2)
[C4] 560 z=a(b(bp,3),b(bp,4)):IF z<>0
     AND z<>lc THEN ok=0
[D3] 570 NEXT j,i
[2C] 580 IF NOT ok THEN PRINT CHR$(7)
     :GOTO 680
[16] 590 PAPER#7,0:FOR i=1 TO bp
[F5] 600 a(b(i,1),b(i,2))=0:WINDOW#7,
     b(i,1)*2+4,b(i,1)*2+5,b(i,2)*4,b
     (i,2)*4+3:CLS#7
[34] 610 NEXT
[0C] 620 PAPER#7,lc:FOR i=1 TO bp
[0E] 630 a(b(i,3),b(i,4))=lc:WINDOW#7
     ,b(i,3)*2+4,b(i,3)*2+5,b(i,4)*4,
     b(i,4)*4+3:CLS#7:PRINT#7,CHR$(10
     )c$;
[3A] 640 NEXT
[40] 650 incomplete=0:FOR i=4 TO 5:FO
     R j=2 TO 3
[69] 660 IF a(i,j)<>2 THEN incomplete
     =-1
[D4] 670 NEXT j,i
[A9] 680 WEND
[B8] 690 ' Completed
[6F] 700 MODE 0:LOCATE 5,6:PRINT"You
     did it!"
[4A] 710 LOCATE 5,9:PRINT"Well done!"
[39] 720 WHILE INKEY$<>"":WEND:CALL &B
     B18:RUN
[AD] 730 ' Draw board position
[21] 740 FOR i=1 TO 5:i2=2*i+4:FOR j=
     1 TO 4:j4=j*4
[81] 750 WINDOW#7,i2,i2+1,j4,j4+3:PAP
     ER#7,a(i,j):CLS#7:PRINT#7,CHR$(1
     0)CHR$(64+a(i,j));
[D3] 760 NEXT j,i
[76] 770 ORIGIN 352,160:PLOT 0,0,15:R
     ETURN
[B7] 780 ' Box
[86] 790 ORIGIN bx,by:DRAW 0,bh,bc:DR
     AW bw,bh:DRAW bw,0:DRAW 0,0
[C2] 800 RETURN
```





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Screen shots from Atari ST version







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Level 9

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**These formats and all tape versions are text only.*

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Send to: Mandarin Software, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

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Cheap rate call

SINCE I last wrote to you I have started machine code, but without an assembler. If there is a book on firmware calls that is cheap, could you tell me? Two calls per month is not really very useful. Is there also a cheap assembler on a utilities disc or something? I doubt it, but you never know.

R. Bucks,
Portsmouth.

LD: The definitive book for documentation on firmware calls is Soft 968. I know it's expensive at £20, but it really is worth its weight in gold to the CPC machine code programmer. The User Club stocks it (091-510 8787). Another good one, although not nearly so detailed, is the Amstrad Advanced Users Guide, £8.50 from Glentop (01-441 4130).

Now that we've merged with *CPC Computing*, we are able to sell its catalogue of compilation discs, one of which – Utilities Galore, not to be confused with our own Utilities Unlimited – has an assembler on it that appeared as a type-in way back in the early days of *Computing with the Amstrad*. It costs £4.95 tape, £7.95 disc. If you phone our mail order department on 0625 879920, they'll be glad to take your order.

New brain wanted

I CAN'T seem to find Bionic Commando or Tiger Road on tape, and I can't get it on mail order because I never get sent the game. So I decided to cheer myself up with a joke. Here goes:

Knock, knock. Erm... What comes next? Oh well, I suppose that's what comes of not getting your letter printed. Let's have a copy of any of the above. Huh?

Andrew M. Nutbeen,
Romsey, Hants.

LD: Don't know about Nut*been*, I reckon you're a raving Nut*case*. We've sold out of what you ordered so you'll have to put up with Operation Wolf. It's in the post.

Shrinking violet

ALTHOUGH I am not given to expressing myself very often, I must write to you to question the fact that I am unable to purchase separately a colour monitor for my 464.

P. G. King,
Broxbourne, Herts.

LD: That's because the CPC is built and sold as a complete package. I have heard rumours of Comet selling CPC monitors separately, but can't confirm that.

You could try your local TV rental people. They may have an ex-rental colour television with RGB input going cheap. In which case you'll need your green screen monitor or an MP-2 modulator to power the computer.

Brother can you spare a line?

I HAVE a 664 and a Brother M-1009 printer. Many of the facilities offered by this printer, which I believe is Epson-compatible, require that numbers greater than 127 be sent via the Centronics port.



Unfortunately the printer port on the CPC will not transmit bit 7. Is there any way to overcome this difficulty which, I should think, must be a frustration to many users? Is it possible to modify the circuit board to connect the output from the relevant chip to the Centronics port?

I have written a machine code program to do a screen dump, in bit image mode, to the printer. This program would be improved if bit 7 was available.

Peter C. Butson,
Harrow, Middlesex.

LD: You can do one of two things, Peter. Either buy the 8 bit printer port from KDS (04853 2076) or wait for the one we're working on for a hardware project. Should be ready for the May or June issue.

Bit near the mark

I HAVE a problem with a disc containing one binary and two Basic files. I loaded one of the Basic files to make an alteration, and upon attempting to resave it a read fail error message appeared. Since then I have not been able to access the disc at all.

Investigating further with Pip and Disckit3 informed me that the address mark on track 0, sector 0 has gone missing. My local dealer says that the disc directory has been erased and that the files are still on the disc but not recoverable.

As these programs represent hours of typing, is there any way of getting them off the disc? Have you any ideas on how it happened in the first place. I thought that CF2 discs were virtually incorruptible.

Steven Smith,
Queens Park, Australia.

LD: Your dealer is correct, there is no easy way to recover the data on that disc. An experienced user armed with a good disc sector editor could maybe salvage most of it, but it would be a pig of a job.

It's about time somebody released an automatic CPC disc doctor to fill the obvious gap in the market. Disc sector editors are all fine and dandy, but the only people able to use them properly are the sort of people who write them.

CF2 discs are as corruptible as any other type of computer disc. The trick is to keep backups of everything. Store your discs in a sealed disc box, well away from heat and smoke and sunlight and pets and coffee cups and magnetic fields and...

No messing about

TO get immediately to the point, Lance Davis *(that's me folks)* writes that Proofreader in the September issue did not work with a printer. I beg to disagree. Referring to the program, see lines 350 and 360:

```
350 screen=&BD5A
360 printer=&BD2B
```

Now look at lines 380, 410, 420 and 430. Where ever *screen* appears then type in *printer* in place of it. Admittedly it is not very user friendly, but I seem to be doing a lot of this sort of thing since I got to know a friend called Arnold.

At first, when I was greener than I am now *(Eeek! An alien!)* it seemed a bit user unfriendly. But I like the magazine now that I am getting used to computers. And I like the little tips that allows old software to run with newer hardware. Like Starwatcher with the DMP2000.

I am extremely fascinated by the Hairy Hacker *(so is Mrs Hairy Hacker)* and while it is all way above me, I always read his Haunt.

V. Goodenough,
Bacup, Lancs.

LD: I swear when I first tested Proofreader it worked fine with Epson-compatible printers on all CPCs. Then one day this chap phoned and said it didn't work with his 464 and DMP2000. So I checked. And it didn't. But it did before. And now it does again. Confused? You will be. Next letter please.

Rubbish tip

THANK you for your courtesy in replying to my query about opening a dummy file (January, A load of garbage). However, I was a bit taken back when you said you did not know *"what book I got this garbage collection stuff from"*. I took it for granted that you would know it came from chapter 2.6 of the Amstrad DDI-1 manual, under the heading 2.4.2. Pre-empting a Garbage

Send your letters to:
Lance Davis
Letters Editor
Amstrad Computer User
169 Kings Road, Brentwood
Essex CM14 4EF

Collection.

I guess that if it comes to a shoot-out between you and whoever wrote the manual, we will hear about it.

Albert B. Purbrick,
London SW15.

LD: OK, Bert, let's try again. If you don't preserve a 2k buffer with *OPENOUT"dummy":MEMORY HIMEM-1:CLOSEOUT* at the start of a 464 program, when it's time to read in some data from file Arnold will scream, "Eeek! No room. I know, I'll chuck the garbage out", which can cause the program to hang up – sometimes for as long as 30 seconds or more – while he sorts out what is garbage and what isn't.

Preserving a buffer means he doesn't have to worry about the garbage, he can simply read the data into that area of memory before allocating it to variables.

Dear Auntie John

FASCINATED, I was, by the firmware calls that appeared in your December article for insertion of the extra memory into the Z80's processor on my 6128. So much so that I consulted my firmware manual, Soft 968. Would you believe they have got it wrong?

Your reference to &BC6E, *KL SWING TRACK*, appears as *CAS START MOTOR* and your reference to &BC71, *KL SWING BACK*, appears as *CAS STOP MOTOR*. And, would you believe, that they actually show &BD5B for *KL BANK SWITCH* on my 6128?

Mind you, in part two they do say that one of eight organisations of the 128k of ram may be selected by calling *KL BANK SELECT* – which appears nowhere else in Soft 968, as far as I can see. However, with eight possible ram organisations, the mechanical switch must be pretty complicated.

Now about this juggling...

R. I. Burrows,
Teddington, Middlesex.

Who, what, where?

I KNOW very little about computers but want to use what has up until now been my daughter's 6128 games machine as a word processor and database. Could you please advise me in simple terms what is the best word processor software available for the 6128: I understand that Tasword and Protext are two of the best.

D. Butcher,
Barnsley, South Yorkshire.

LD: As far as CPC word processors are concerned, it's horses for courses. If you are an experienced computer user and you intend to do a lot of word processing, I recommend Protext.

Tasword from Tasman Software is nice because it uses the 6128's extra 64k of ram. But it is awfully slow sometimes.

Over 500,000 users across many computer formats swear by Database Software's Mini Office II. It's big feature is its ease of use, but at the end of the day it lacks real power. Good value though.

On the other hand, BrunWord from Brunning Software is said by many to be as powerful as Protext and as easy to use as Mini Office II.

My advice? If you have money to spend, Wacci (01-898 1090) sells the Rombo rom board plus Protext and Prospell on rom for £80. Otherwise get BrunWord from Brunning Software (0245 252854) for £25 on disc.

Two good sports

I READ with interest the letter from Ian Gardner (January, Bottom of the league). I have written a suite of programs that do what he is asking for – except for recording the various players and their averages – but I can organise a fixture list for 12 teams playing on various days of the week and list the fixtures. Also I can record the results and print or display the league table.

If you could pass my telephone number to Ian, we could arrange a way of getting copies of my programs to him.

John Lister,
01-422 8003.

* * *

REGARDING the letter from Ian Gardner (Bottom of the league). I have already written similar programs for golf and cricket. The problem looks an interesting one. However I stress that I am not promising anything.

Having said this there are a few questions that need to be answered before attempting the project. Please pass these comments on to Ian. He can phone if he is interested in taking the matter further.

Mick Ellick,
0272 854158.

Blinded by the light

WHAT does the Ed think he is playing at? Over the last three or four issues the magazine has changed drastically. Because of the reader survey, I suppose.

Where is the mega Seek and Ye Shall Find and the large software chart with the witty comments. Now I am confronted with trillions of games reviews. The only decent article that has stood the test of time is the Hairy Hackers Haunt. Carry on the good work, Vax.

Pull yourself together *ACU* or you may be losing a regular reader. You are in danger of turning into a crummy second rate magazine with nothing but games reviews and posters and the like.

R. Whiting,
Cheddleton, Staffs.

LD: The large software chart was a waste of space. If you're looking for witty comments, try the games reviews, they're full of them. Get off your soapbox and take a good hard look at what you are complaining about, the games reviews take up less than 10 pages of a 76 page magazine.

Hello mum

FIRST let me congratulate you on an excellent January issue, grovel grovel. *(Thanks thanks).* Now that's out of the way, let's get down to business. *(Gulp).* In an early *ACU* you did a small feature on the Cheetah 125 Special joystick. *(Did we?).*

You said that various games were being coded that made use of the joystick's extra buttons and that *ACU* was going to review such games. *(Ah yes, so we did).*

Well I have a Cheetah 125 Special, and I am not pleased. *(Uh oh).* The auto-fire doesn't work *(Dodgeee!)* and where are these games? *(Gulp. Erm...).*

Anyway I wish the magazine good luck with the new facelift *(gee tanks)* and let's hope that the new Star *ACU* Game becomes as familiar with the software houses as other computer magazine awards. *(Can't fail).* Surely that deserves a free game? *(Nah).* Oh well, really all I want is for my letter to be published. *(Hokay).* With a proper reply. *(Ah...)*

Paul Fresh,
Northwood, Middlesex.

LD: Hey, Paul – great news. Imagine's Victory Road works with your Cheetah joystick. Yes it does. Honest. Well, except for the auto-fire of course. Read the review. No not that way. Back up a few pages.

What's an Amiga?

FOLLOWING the Christmas spree no doubt many readers will be the proud owners of new 16 bit computers, beginning to find out what it costs to equal the CPC range of software pound for pound. And, of course, it is always *software* that makes a computer worth having.

For example, the new Amstrad PC2086 is a very attractive upgrade, but on running down the list of PC software to replace my CPC range – including Protext, Prospell, Maxam, Utopia, BCPL, Mini Office, Advanced Art Studio, Qualitas and its range of extra fonts – you can estimate spending at least three times as much as you thought would set you up with the new machine.

My own second computer is the Amiga 500, but the CPC6128 is still my main work horse, and with good reason: It has Protext and other Arnor software very nicely installed in roms, so no disc loading needed.

Admittedly it lacks the amazing fast and stunning graphics, blitter and Midi, but also there are no plagues of SCA and Byte Bandit viruses, or worms, tapeworms or trojan horses, as some of them are called on the PC. And no £100 for just *four* games. If I wanted to write a sequel to Gone with the Wind, I could manage very well with the CPC.

Experienced CPC users know why they like their machine. It will still soldier on even when

The land of Shades

by someone who has been there and survived

I TOLD you last month how to kill and run away when others come after you with the axe, the rusty longsword or even the mild unassuming rat which hath teeth the like of which I have never seen.

The best way to practice if you are a worthless beginner is by bashing the mobiles like the deer. But sooner or later another player will attack you, and if he is any good he may do rather more than just type K BABY LS and wait to see what happens.

So learn your spells. You cannot use all of these at once but when you have acquired enough points new spells become available. But you must know what some of them are in case big tough bullies like Spitzen use them against you!

Most useful is STEAL which you can use to deprive your opponent of his only weapon.

Then there's STRIP and FUMBLE. The first makes you drop any weapons you are carrying, and the second makes you drop everything. Useful in fights where your opponent has more than one weapon.

When it comes to the best weapons like the rusty longsword or the rat, you can only carry one at a time unless you steal another. So if a player has both, and you make him drop them, he can only pick up one, leaving the other for you.

You need to know how well you are doing in a fight, in order to flee in time. Spitzen's remaining stamina can be revealed with QS SPI, and as you will see your own going down, you can tell who is winning. Spitzen of course, so run away and hide!

To find out what weapons Spitzen has use I SPI. But remember players may be carrying invisibly, so you may have to guess or wait until attacked.

A very nasty spell is CRIPPLE which only lets you move one step at a time by typing HOBBLE. Fighters who use this are the scum of Shades but there is no law against being scum, so be careful.

If you are not much good at fighting your best bet is to QUIT straightaway and log back on to whinge and moan and let everybody know what you think.

Above all, if you want to learn how to fight, do not use your favourite character, create a special one to practise with. Later you can take out your 'main' character reasonably confident of handling the killers.

Next month I will talk about the safe places in Shades like the pub, the church and the bridal suite, and what you can do in them (Oooo-errr.!)

May the goddess be with you!
Whirlwind

PS Congratulations to Stunner the really gorgeous Witch, the first TG player to reach immortality! Also to Stingray who made it in record time – at the second attempt He He!

And hi to the MicroLink gang – Arfabrain, Skeeve, Zimmerman, Mnementh and Zakym. And a special hello to Dodo from Iceland!

You can enter the land of Shades using your micro, a modem – and a registration to MicroLink. If you are not a member write for details to: MicroLink, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

The day Roger Jackson sent his first mailshot.



I was impressed by the fact that Star have now produced a great looking little budget printer with a 24 pin head.

I was impressed by its excellent quality – the 8 resident fonts available and its high density letter quality helped me produce a really professional mailshot.

I was impressed by the extremely swift draft elite speed of 170cps and LQ elite at 57cps and the standard 7k buffer.

I was impressed by the special push-tractor feature that allows the LC24-10 the lowest possible tear off and its ability to 'park' continuous paper and load single sheets automatically – so there's no need to remove the continuous.

I was impressed by the touch-button front control panel that makes using the printer an absolute dream.

But most of all, I was particulary impressed with myself.

Because my Star LC24-10 was so inexpensive and no other printer comes close for sheer quality and value-for-money.



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Please tell me how the Star LC24-10 can handle my printing needs.

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Company ____________________

Address ____________________

____

Postcode ____________ Telephone ____________

Or just call Belinda on 01-840 1829.

L24ACU3

transputers and many new wonders have appeared on the scene because its reliability has been proved.

John Gray,
Eastbourne, Sussex.

Brilliant

I BOUGHT *CPC Computing* regularly. In fact I had a subscription. When I heard about the merger I was disappointed because I have read your mag before and thought it rather boring. However when I received the January edition I was very pleased. It was a *brilliant* edition, and I hope you keep it up.

However I wrote this letter for two reasons. The first to congratulate you for the improved mag. Secondly I wrote to complain about your adventure section. I'm a great fan of adventure programs and was sad to see only two pages. In my other magazine there was four or five pages of reviews and tips and solutions and even addresses to get together to solve the adventure. Please fatten up the adventure section and make a lot of people happy.

David Perry,
Dulwich, London.

LD: When new CPC adventures appear, which is all too seldom these days, Gandalf's reviews will be found in the *Which Game?* section. We're working on a new adventure column. But doesn't publishing solutions defeat the object of playing adventures?

Dear Auntie John

I AM having a spot of bovver with the *TXT OUTPUT* firmware call in part one of your excellent series, creep creep, the problem being that I cannot get it to run. Could this be because I am using Maxam II and, as such, will have to resort to BDOS calls?

Surely this cannot be, because you state in paragraph one on page 14 of the July issue: "The beauty of the system is that it always works – if Amstrad changes the internal workings of the computer, as long as the jumpblock stays the same all the..."

I would very much appreciate an answer to my problem as I would like to get on with the lessons.

Chris Eccles,
Hoylake, Wirral.

LD: Your problem, Chris, is that Maxam II is an assembler for writing CP/M machine code tools. Although the firmware is still there when CP/M takes over the machine, getting at it involves a little more work than usual. What I'm saying is that Auntie John's listings will not work under CP/M.

You can still use Maxam II to assemble them, but you'll need to use a Basic program on the Maxam II disc which turns a CP/M .COM file into an Amsdos .BIN file. If you can't find the program I mean, speak to Arnor about it on 0733 68909.

Free adventure

I HAVE written a text-only adventure running under CP/M. I wrote it purely for my own pleasure with no thought of selling it. However I would like to share it. If any interested readers would care to send me a formatted 3in disc together with a stamped addressed envelope, I will be pleased to let them have a copy. Please state which machine it is for.

K. N. Bond,
17 Adel Park Gardens,
Leeds LS16 8BN.

Get it off your chest

AT school I went through the phase of not putting up my hand to ask a question because I thought I was the only one who didn't know, and I didn't want to look stupid.

For some time now I have had the same experience with computer software, until recent conversations with "would-be" users tells me I am by no means alone with my problems.

As a shorthand typist, secretary and personal assistant with years of office experience, I don't know what the hell you are all talking about!

The equipment I own is an Amstrad PC2086/30 and an Amstrad printer. I would love to be able to switch it all on, *write* a letter – in all my life I have never processed words, nor do I ever want to – and then merely type a normal letter – without going through the mental gymnastics – and see it laid out on paper.

Then I would love to file it, print it – if these damn computers are so wonderful, why can't they do both these jobs (operations?) at once to save time – and get on with typing the next letter without waiting for the filing and printing to happen and finish. You know, like you can with a typewriter.

Corrections and editing apart, I'm not even sure that typing and a filing cabinet aren't quicker and cheaper for everyday normal letters.

The biggest annoyance is the computerised filing cabinets I see on offer – databases I think you call them. Why do I have to learn a foreign language to use use office equipment? User friendly – phooey!

You see, in my filing cabinet I have a *lot* of short stories and descriptions of items that *I am told* a computer could whizz through and locate any word or item I wanted. But, and this is a massive but, as soon as I buy a database I can't do it.

Why not? I can't understand it, that's why not. A simple example? There are no fields in my filing cabinet. It has file cards in it with information on each card, but it certainly has no sheep or cows in a field.

There used to be a lovely program on the Atari 800 that immediately put a file card on the screen. You typed on to it, filed it and got on with typing the next card.

The simplicity is gone. Without training *nothing* is user friendly, and that's a massive marketing mistake. The machine could and should be useable by everyone, but right now they are only useable by people trained in the language of the systems.

My typewriter, useable by all my family, is hot – my computer gathers dust. Shame!

Georgina MacMillan,
South Benfleet, Essex.

LD: Sniff. S'not my fault. Sniff. And you're buying the wrong magazine. This one's for the Amstrad CPC home computer. You know, the one your son keeps pointing to in Dixons saying: "Me want, mama, me want"

Two into one

I LIKE your new Proofreader in the January issue. However, you say to save two versions, one for the screen and one for the printer. One version is all you need with the following changes:

```
140 MODE 1:MEMORY HIMEM-129
290 PRINT:PRINT "(P)rinter or (S)cree
    n ?":i$=""
300 WHILE i$<>"P"AND i$<>"S":i$=UPPER$(
    INKEY$):WEND
310 IF i$="S" THEN sc=&BB5A ELSE s=&B
    D2B
430 IF i$="P" THEN PRINT "printer "; EL
    SE PRINT "screen ";
440 PRINT"are on.":PRINT:PRINT"Poke HI
    MEM+7,&18 to turn off."
445 PRINT:PRINT"Press any key":CALL &B
    B18:CLS:NEW
```

With this, pressing P or S gives you either the printer or the screen with one version, and it also clears the memory for your programs.

T. H. Spence,
Lerwick, Shetland.

On the scrounge

I HAVE never written to you before but felt I had to when I received my January issue. It was brought to my attention that *ACU* and *CPC Computing* have joined forces. BRILLIANT. Just think of it, my two favourite magazines in one neat cover. What else could I ask for? *(Anything you want.)* Anything? *(!Yes, anything.)*

OK. The 10 Liners. Where are they? Please don't tell me they've been stopped because of the merge. Many others feel this way, you know. So please, please let's see them again. Then there will be absolutely no way I can fault you. Can I have a free game now?

Darren Haynes,
London NW10.

LD: The 10 Liners are back, Darren. They just got postponed for a couple of months because of commitments to other *CPC Computing* outstanding articles. Go on, take a quick look now – there's a real treat in store for you this month. Run out of free games at the moment. Next month maybe. Provided you write me an interesting letter.

Bending the rules

Vax finds that if you give a friend an inch he'll probably take a blowtorch to it

HAPPY Valentines Day folks. I'll thank you in advance for all those wonderful cards I know you'll have sent me. I love you all, too. While you've been sending out valentines, my mate Rupert has invented a new artform: Rulers. You take a perspex ruler and warm it up. Then you bend it, stretch it with pliers, poke pencils into it and generally conduct the Spanish Inquisition on it. No one expects the Spanish Inquisition . . .

Eventually, the ruler becomes the plastic incarnation of a very weird nightmare of the type usually brought on by eating pizzas with chocolate sauce before going to bed. Rupert's latest creation involves several rulers of varying sizes. Go easy with the blowtorches, comrades.

Adam Todd has sent in yet another batch of sizzling pokettes. First one here is for Killapede, which I just love. He's hacked the thing so that one hit will deliver sufficient fungicide to knacker a mushroom. And you're immune to spiders, ants and ghostises.

The killapede and fleas can still catch yer though, so watch it. Oh yes, the Escape key will take you to the high score table if your score's high enough:

```
1 ' Killapede
2 ' Adam Todd
3 '
10 MEMORY &2000:MODE 0:BORDER 0
20 CALL &BB48:tot=0
30 FOR p=0 TO 15:READ a:INK p,a:NEXT
40 DATA 0,2,6,24,15,20,1,26
50 DATA 3,10,18,17,9,7,4,3
60 FOR b=&9000 TO &903D
70 READ d$:c=VAL("&"+d$)
80 POKE b,c:tot=tot+c:NEXT b
90 IF tot<>&16C3 THEN PRINT"Erorr in
   DATA.":STOP
100 CALL &9000
110 LOAD"!screen.scr",&C000
120 CALL &101:END
130 DATA 21,0c,90,11,00,01,01,2d,00
140 DATA ed,b0,c9,00,3e,ff,cd,6b,bc
150 DATA 06,01,21,00,01,11,00,a2,cd
160 DATA 77,bc,21,80,01,cd,83,bc,cd
170 DATA 7a,bc,21,a6,4a,22,7d,4a,af
180 DATA 32,90,3d,3e,1d,32,94,37,32
190 DATA 9a,37,32,a0,37,c3,8a,49
```

I hope that checksum was supposed to say &16C3 Adam, but the code makes sense even if I couldn't check it personally.

Adam's next hoopy poke gives you more perk in the disc version of Target Renegade. As an added bonus there's a poke in it which lets you leave your Multiface plugged in the back, if you have one. What you get for your money is 16 lives for player one and the clock resetting to 6:00 when time runs out, if you have any lives left. Type and enjoy:

```
1 ' Target Renegade (disc)
2 ' Adam Todd 3 '
10 MODE 1:tot=0:FOR b=&C0 TO &FF
20 READ a$:c=VAL("&"+a$)
30 POKE b,c:tot=tot+c:NEXT b
40 IF tot<>&1A9A THEN PRINT"Error in
   DATA.":STOP
50 INPUT "Insert target disc and pres
   s Return",d$
60 CALL &ED
65 '
70 ' no need to remove Multiface.
75 '
80 DATA 21,b7,7f,22,ea,1d
90 DATA 21,56,22,22,ec,1d
95 '.
100 ' tot=&1662 without lines 80 & 90
105 '
110 DATA 21,83,1d,e5,af,67,47,2e,e3
120 DATA 0e,0a,11,91,1f,ed,b0,e1,e9
130 DATA 41,54,3c,c0,07,71,7b,84,44
140 DATA 7d,74,ab,8c,f0,ec,af,5f,6f
150 DATA 57,3c,67,3a,de,00,4f,df,e0
160 00,21,c0,00,22,11,01
```

Adam's last pokette – well, hopefully not his very last – is for Saboteur en cassette. If you ever needed loads of time to plant bombs (What do they grow into? Hand grenades?) and nick the helicopter, then this is for you:

```
10 MODE 1:MEMORY &1388:tot=0
20 INK 0,0:INK 1,2:INK 2,16
30 INK 3,24:BORDER 2
40 FOR b=&100 TO &13D
50 READ a$:c=VAL("&"+a$)
60 POKE b,c:tot=tot+c:NEXT b
70 IF tot<>&1E82 THEN PRINT"Error in
   DATA.":STOP
80 CALL &101:BORDER 0
90 CALL &106:END
100 DATA 31,3e,ff,cd,6b,bc,21,00,01
110 DATA 11,00,25,e5,d5,06,01,cd,77
120 DATA bc,d0,eb,cd,83,bc,d0,cd,7a
130 DATA bc,d0,d1,e1,7e,fe,36,28,07
140 DATA 3c,77,fe,36,c8,18,e1,21,90
150 DATA 74,22,e0,b5,22,05,46,af,32
160 DATA 9f,b7,32,c4,47,c3,87,5b
```

Nice ones, Adam. Cheque's in the post.

A brief break there while I stop baby Kate from eating Bruno . . . and we'll press on with this tip from Mark Bowen in deepest Dorset, pronounced Darset. He says that pressing the Tab key in Firebird's Ricochet gets you 300 points and up into the next level. Don't we get the devious ones, then?

Sometimes we get too devious. Case in point was the Impact poke of a few issues back when line 170 should have looked like:

```
170 DATA 3e,00,32,fa,7a
```

Thank you Matt Cawley. I blame it on the old lion noise over the modem meself. Shame BT Gold don't do Xmodem, innit?

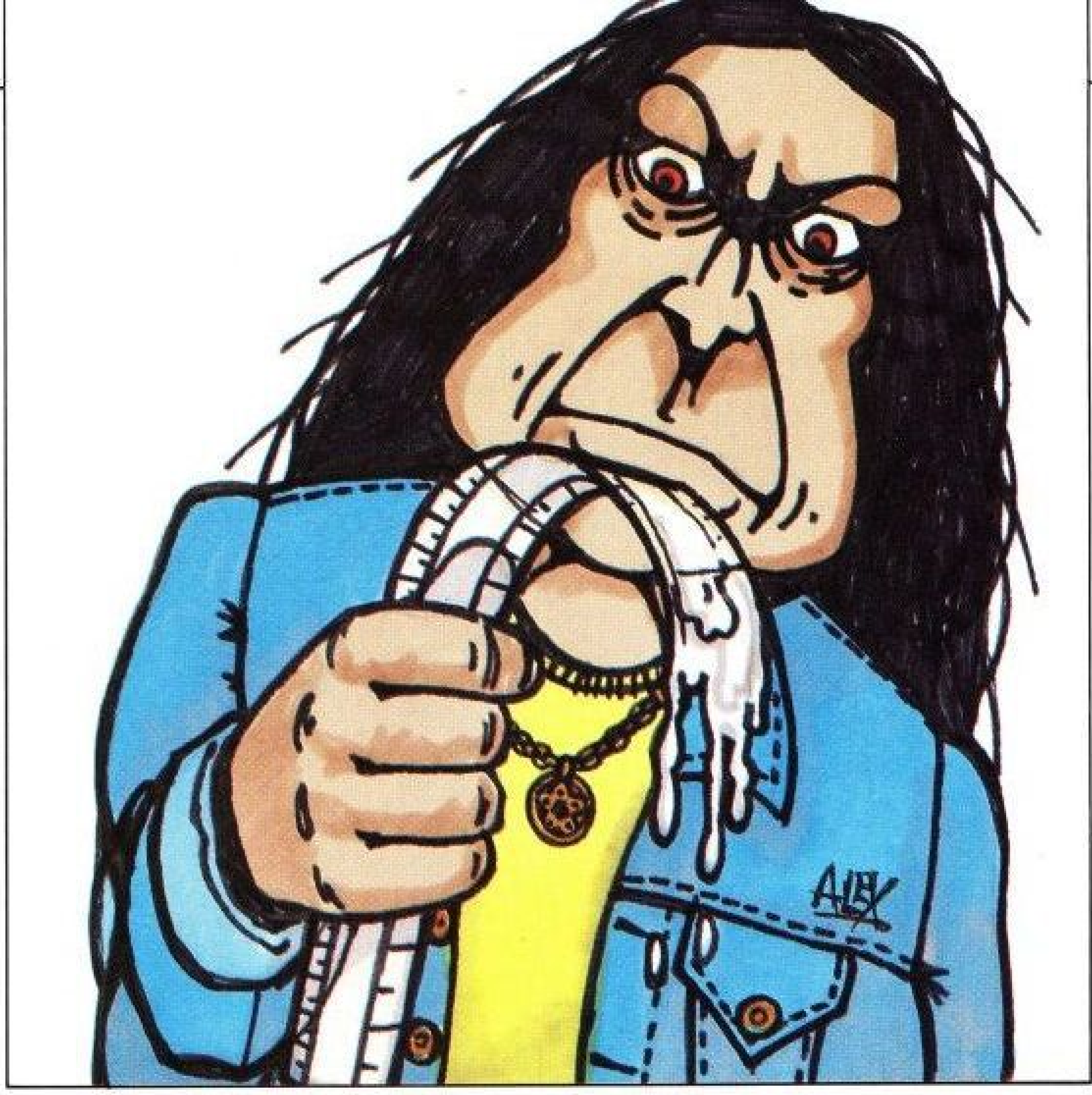
Being basically kind, if a little eccentric, Matt didn't just send in a letter to rib my, or somebody else's, mistakes. No, I can do that very well myself. Alan Crosby springs to mind. Wonderful poke, would have made Hack of the Month in fact. Except that there was no data terminator, no increment, two incorrect checksums and the *READ a$* was outside of the *WHILE...WEND* loop. I don't normally point out people's little faults, but this was a real wooden spooner.

First off, we'll deal with your wee pokeykins for Little Computer People. It's for disc only – anyone seen it on tape? – and changes the little computer person's name by deed pole:

```
1 ' LCP Name Changer
2 ' Matt Cawley
3 '
10 chk=0:FOR addr=&AF00 TO &AF2B
20 READ byte$:byte=VAL("&"+byte$)
30 POKE addr,byte:chk=chk+byte
40 NEXT addr
50 RESTORE 230:READ chk$
60 IF chk<>VAL("&"+chk$) THEN 140
70 CALL &AF00
80 FOR a=&80AA TO &80AA+10
90 POKE a,0:NEXT
100 INPUT "New name: ",n$
110 IF LEN(n$)>10 THEN PRINT"Too long
    ":GOTO 100
120 FOR n=1 TO LEN(n$)
130 POKE &80AA+n,ASC(MID$(n$,n,1))
140 NEXT n
150 POKE &AF20,&85:CALL &AF00
160 END
170 PRINT"Erarr inn DAITA.":END
180 DATA 21,00,80,16,0e,1e
190 DATA 00,0e,42,e5,d5,c5
200 DATA 21,20,af,cd,d4,bc
210 DATA 22,21,af,79,32,23
220 DATA af,c1,d1,e1,df,21
230 DATA af,c9,84,00,00,00
240 DATA 48,69,20,43,6c,61
250 DATA 72,65,00,00,00,00
260 DATA 1195
```

Also with LCP, if you type *LOGON* the little computer person will go to his computer and give you a chance to change your name. Not many people know that, Michael.

Still with Matt, we've a pokette which pounces on Spindizzy. Not the everyday version, but the one given away by a certain other CPC magazine which is also after a piece of the Action. Strange how Matt should have sent it in to us:



```
1 ' AA Dizzy pokes
2 ' Matt Cawley
3 '
10 MEMORY &3000
20 addr=&BF00
30 READ byte$:IF byte$="CM"THEN 70
40 byte=VAL("&"+byte$)
50 POKE addr,byte
60 addr=addr+1:GOTO 30
70 LOAD"":CALL &3AB0
80 LOAD"!",&3040:CALL &BF00
90 '
100 ' The key
110 DATA 01,c8,01,11,37,bd
120 DATA 21,2d,bf,ed,b0,01
130 DATA ee,01,21,40,30,11
140 DATA 40,00,ed,b0,21,40
150 DATA 00,e5,21,00,bb,e5
160 DATA 21,ee,01,e5,21,07
170 DATA b8,e5,21,bb,02,e5
180 DATA f1,f3,c9,af
185 '
190 ' The pokes
195 '
199 ' Infinite lives
200 DATA 32,c2,9b
205 ' Fast game
210 DATA 32,b3,8f
215 ' Fast music
220 DATA 32,8d,9c,32,9f,9c
225 ' Slow music
230 DATA 32,ad,9c
235 ' No nasties
240 DATA 3e,c9,32,72,80
245 ' Game completed
250 DATA 3e,c9,32,97,80
260 ' *** Leave ***
270 DATA 3e,cf,32,37,bd,3e
280 DATA 88,32,38,bd,32,39
290 DATA bd,c3,37,bd,CM
```

Last in the serious line from the Matt Cawley stables we have a pokeykins here for Winter Games. It's for the embarrassing moments when some other beggar gets an eeeenormous score and you have to look at it every time the game loads.

Well, no more. With a piff paff pouf your high score table is virgin ground again. Well, almost. Where have I seen that name before?

```
1 ' Winter Games (disc)
2 ' Matt Cawley
3 '
10 chk=0:FOR addr=&AF00 TO &AF6D
20 READ byte$:byte=VAL("&"+byte$)
30 POKE addr,byte:chk=chk+byte
40 NEXT addr
50 RESTORE 240:READ chk$
60 IF chk<>VAL("&"+chk$) THEN 80
70 CALL &AF00:END
80 PRINT"Some people can't type!"
90 END
100 DATA 21,55,af,11,00,50,06,0b
110 DATA cd,77,bc,d0,21,ac,0c,cd
120 DATA 83,bc,cd,7a,bc,06,07,c5
130 DATA 21,4b,af,ed,5b,49,af,01
140 DATA 0a,00,ed,b0,ed,53,49,af
150 DATA c1,10,ec,21,55,af,11,00
160 DATA 50,06,0b,cd,8c,bc,d0,3e
170 DATA 01,01,00,00,21,ac,0c,11
180 DATA 46,00,cd,98,bc,cd,8f,bc
190 DATA c9,ac,0c,4d,61,74,74,20
200 DATA 20,20,20,14,00,52,45,43
210 DATA 4f,52,44,53,2e,42,49,4e
220 DATA 4c,75,76,20,79,61,20,62
230 DATA 6c,6f,6e,64,69,65,00,00
240 DATA 2930
```

Great going Matt. More encouragement is coming your way forthwith.

Meanwhiles, in the totally frivolous department, Matt's idea of a joke: A fuzzy screen program. Well, it's not too far away from April 1 to be plotting, I s'pose:

```
1 ' Fuzzy
2 ' By Matt Cawley
3 '
10 chk=0:FOR addr=&8000 TO &8027
20 READ byte$:byte=VAL("&"+byte$)
30 POKE addr,byte:chk=chk+byte
40 NEXT addr
50 RESTORE 999:READ chk$:IF chk<>VAL(
  "&"+chk$) THEN PRINT"Their iz an er
  arr inn tha daita":END
60 CALL &8000
90 '
100 DATA 21,00,c0,ed,5f,ed
110 DATA 4f,77,23,7c,fe,00
120 DATA 20,f5,01,00,bd,ed
130 DATA 5f,ed,4f,ed,79,cd
140 DATA 19,bd,3e,42,cd,1e
150 DATA bb,20,02,28,eb,3e
160 DATA 02,c3,0e,bc,00,00
999 DATA 1209
```

Well Matt, if you'd like to send me some details on how you think your disc speederupper works I might just print it. Meanwhiles I'll hang on to your code. The disc is going back, by the way.

Last poke is from Vincent D'Haeyere in Belgium and does something awful to Nebulus:

```
1 ' Nebulus hack (disc)
2 ' By Vincent D'Haeyere
3 '
10 MEMORY 32768:MODE 0
20 LOAD "nebload.bin"
30 DATA 21,ef,85,36,00,c9
40 FOR i=1 TO 6:READ a$
50 POKE &30+(i-1),VAL("&"+a$)
60 sum=sum+(VAL("&"+a$)*i):NEXT
70 IF sum<>2332 THEN 100
80 POKE &8172,&CD:POKE &8173,&30
90 POKE &8174,&0:CALL 33024
100 PRINT "Error in DATA.":STOP
```

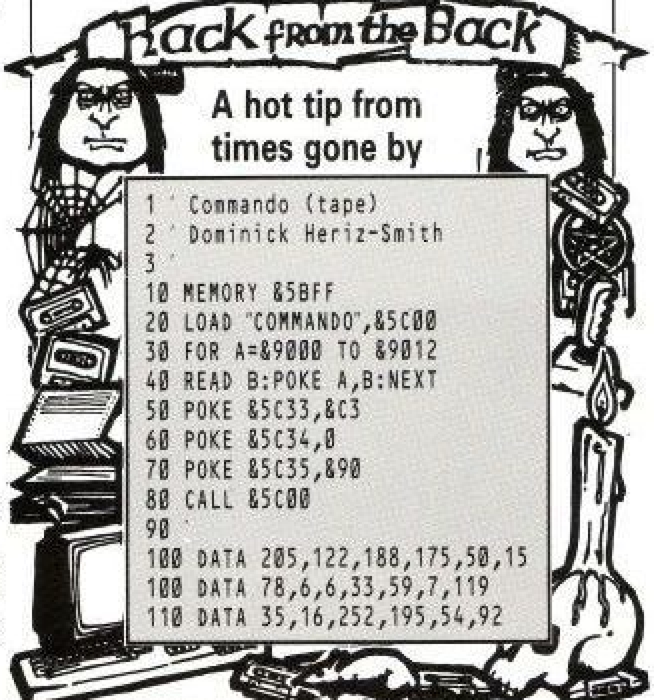
Now good news for you wonderful people who actually send stuff in to me that doesn't start with *"I think Hackers is great . . . please send me poke X. Love Fred"*. We're dishing out better prizes.

In order to maintain an air of suspense, I'm not allowed to tell you what it is. Let's just say that it's useful, and that Hack of the Month gets twice what everybody else gets. You want to find out what it is? Send in yer pokes then!

Ah yes, due to the new prizes I must ask you to make a statement which has the following gist: *"This is my code/poke/program. I didn't nick it off of someone else and it hasn't been published before either. Signed, Conan the Barbarian."* From now on I won't be able to accept anything without that sort of declaration on it. Orders from above.

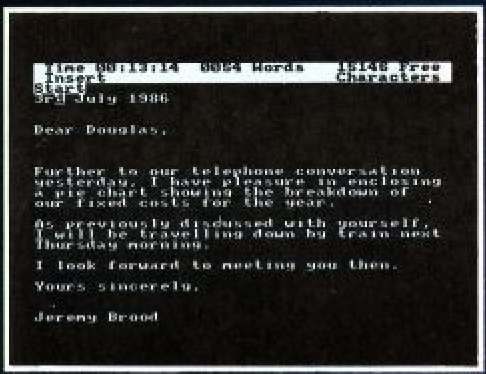
Right. I've just developed a nasty case of hacking of the cough-choke-splutter variety associated with flu, so we'll have to call it a day.

Luv, the Vax clan

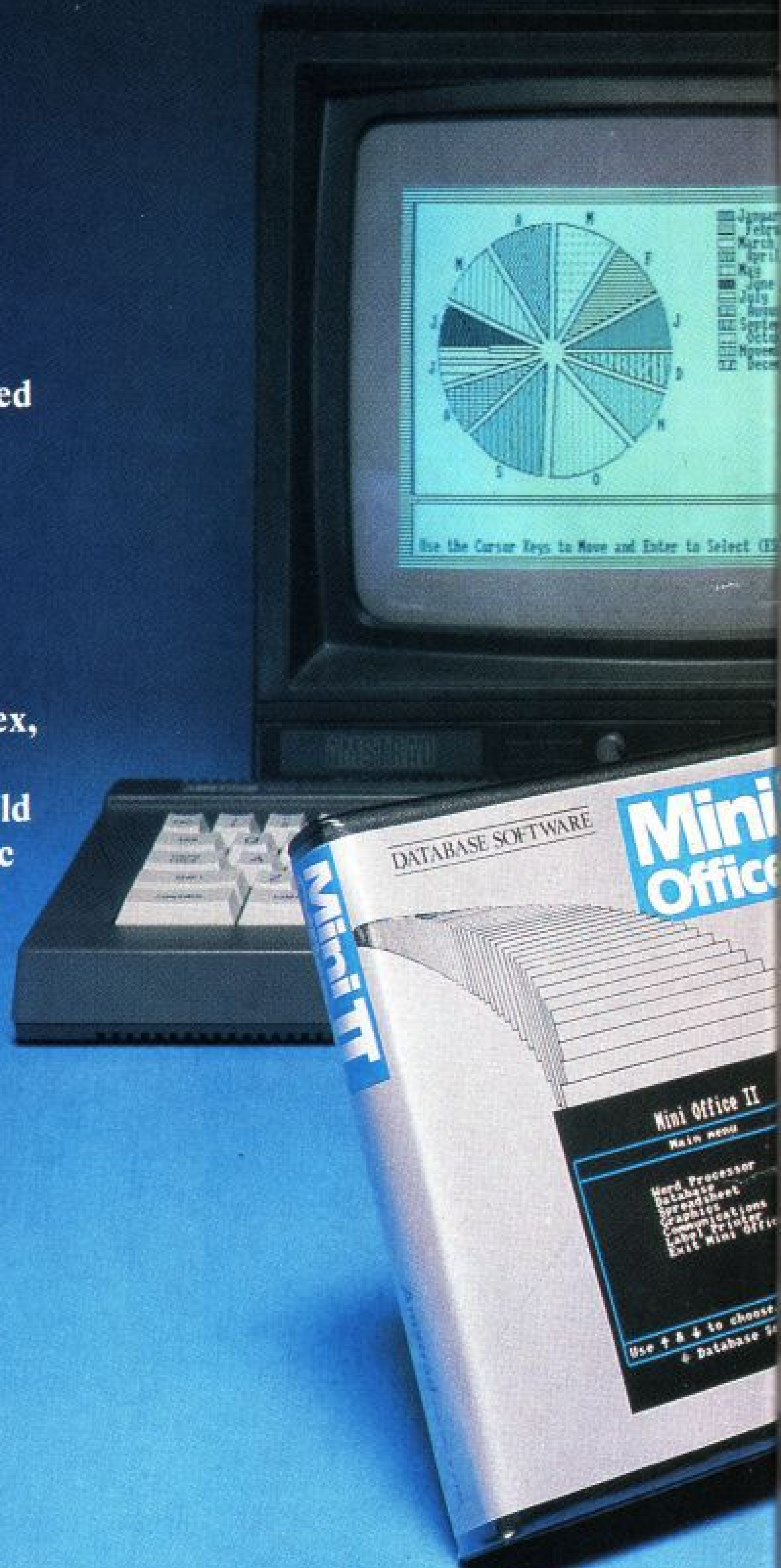



```
1 ' Commando (tape)
2 ' Dominick Heriz-Smith
3 '
10 MEMORY &5BFF
20 LOAD "COMMANDO",&5C00
30 FOR A=&9000 TO &9012
40 READ B:POKE A,B:NEXT
50 POKE &5C33,&C3
60 POKE &5C34,0
70 POKE &5C35,&90
80 CALL &5C00
90 '
100 DATA 205,122,188,175,50,15
100 DATA 78,6,6,33,59,7,119
110 DATA 35,16,252,195,54,92
```

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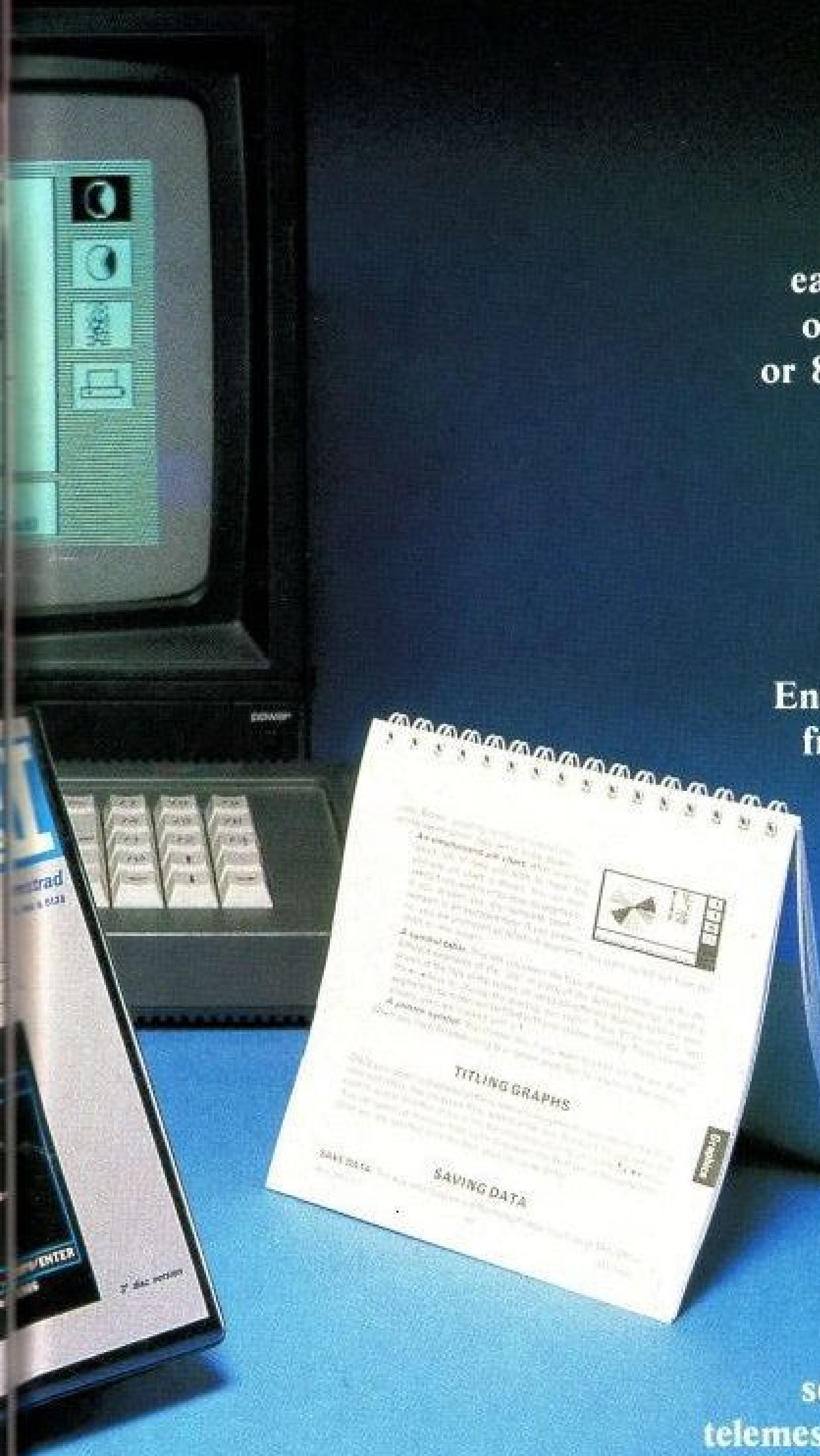
Yet possibly the best advertisement for Mini Office II is that it comes from the same stable that produced the original Mini Office package back in 1984.

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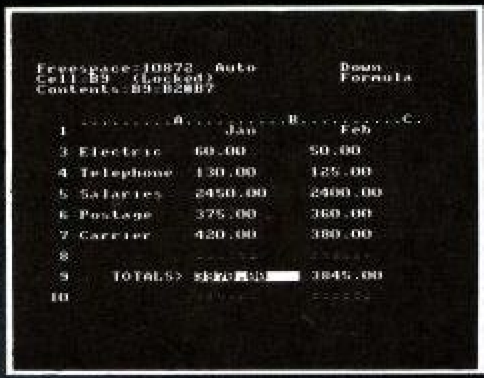
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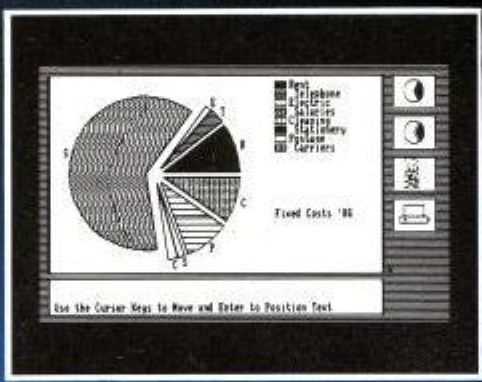
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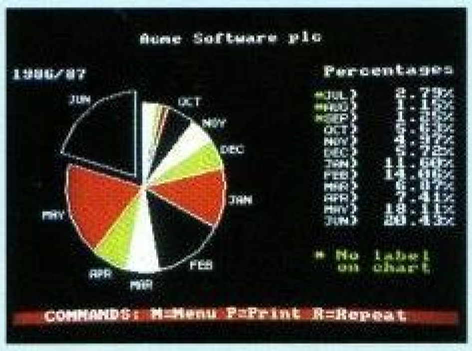
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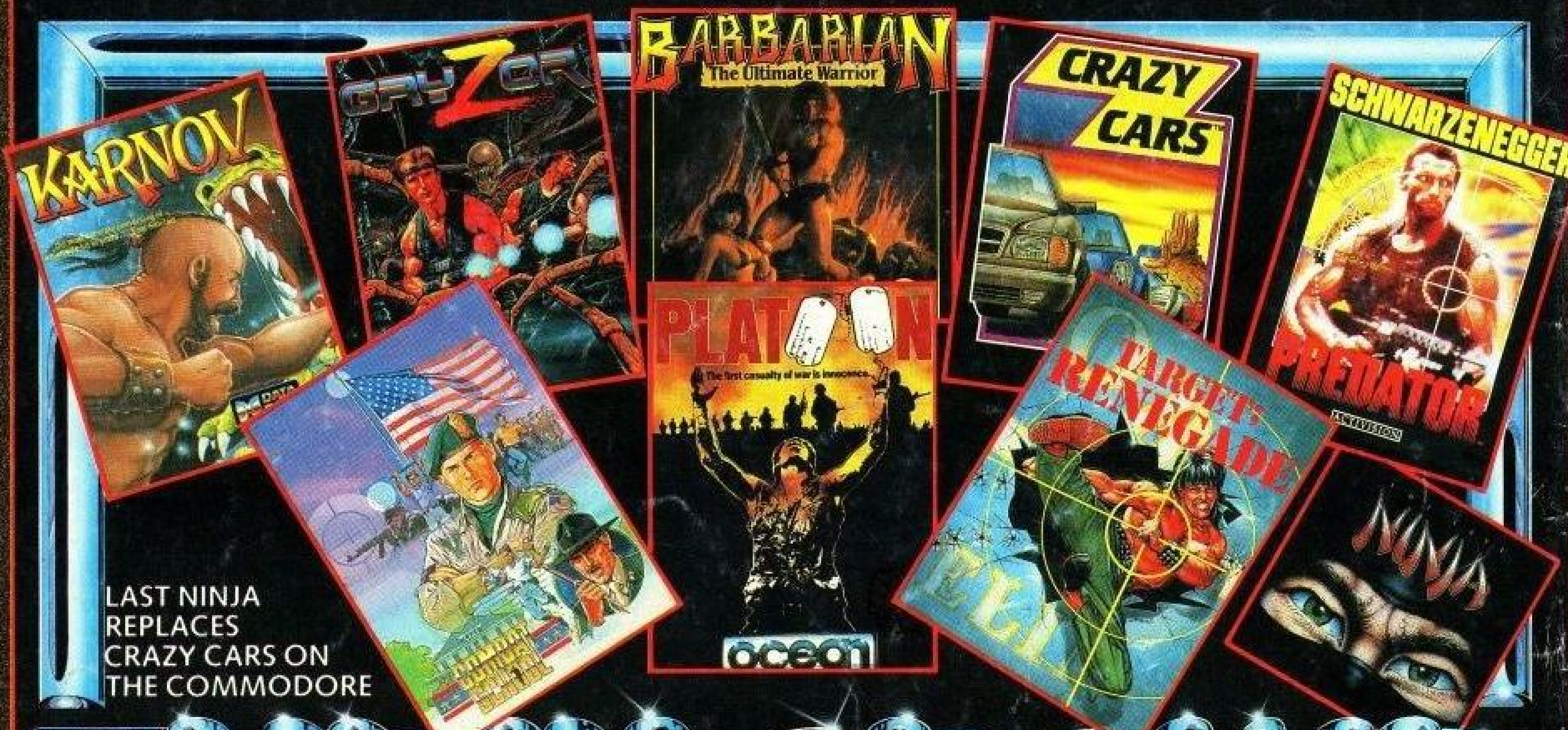
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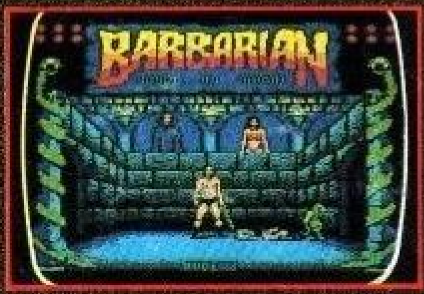
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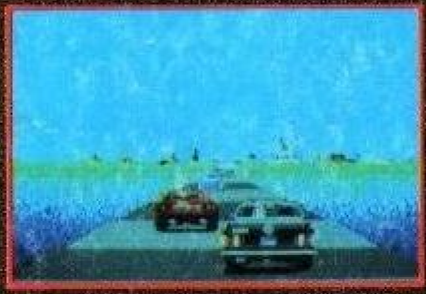
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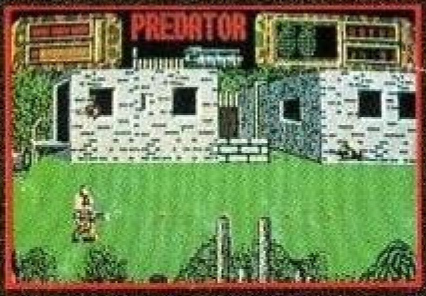
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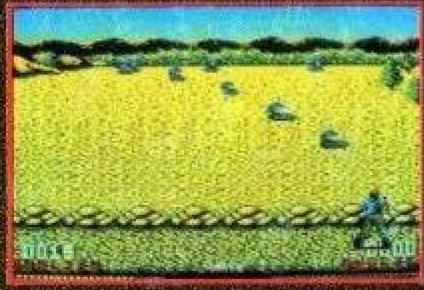
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